See Equipment Review Section Beginning Page 33

Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

Vol. XVI, No. 4 **FEBRUARY, 1940** **$2.00 a Year**

Contents of This Issue

Letters from Readers of Industrial Finishing 4
Styles, Finishes and Colors for Our 1940 Furniture 10
It Is Smart and Profitable to Recover Used Solvents 14
Electrical Modernization Needed in Product Finishing Rooms 22
A Review of Equipment for the Finishing Room 33
Finishing Shutter Awnings 68
Spraying Filler . . . . An Improvement in Furniture Finishing 73
Questions; Answers 77
Editorial 86

Lea Mfg. Co. Appoints E. C. Jarm 13
Detroit Rex Appoints E. L. McIlhenny Mgr. Alkali Division 13
Hilo Varnish Corp. Exhibit Booth 21
Yarnall Paint Co. Holds Annual Sales Convention 30
Spray Painting School to Open 30
Dr. A. Lloyd Taylor Joins Oakite Technical Staff 30
Lilly Varnish Co.'s 75th Year 72
Heating & Ventilating Show; Trend of Finishes 72
Agents for Ventilating Equipment 85
Promoted to Managers in Detroit Rex Products Co. 89
Heat Transfer of Porcelain Enamel Metals and Other Materials 89
Shellac Information Bureau Formed 89

Buyers' Directory 90
Advertisers' Index 95
"Classified Advertising" Section 96

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Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Luminous Paints

Can you give us the names of manufacturers of luminous paints that can be silk-screened, or a powder or paste that can be mixed with some vehicle so as to make a silk-screen paste?—C. & Co. (Signs)

Graining Paper

Please send us samples of graining paper from O. Leistner, Inc., as mentioned in the January issue, page 4.—H. R. Co. (Metallic Caskets)

Temporary Coating to Prevent Rusting

Where can we obtain a wax preparation that will prevent small brass-plated steel parts from rusting or tarnishing, and that will also serve as a lubricant? The small steel parts mentioned are used in draw-curtain rods that we manufacture, and it is essential that the parts carry some kinds of a lubricant in order to obtain smooth and easy operation.—K. Mfg. Co. (Distinctive Drapery Fixtures)

Enameling Equipment

We have an inquiry from a customer in Mexico who would like to know where he can get some information about enameling cast-iron products, especially machinery, and the method of application. It occurs to us that you might be able to get this information for him through your advertisers; if so, have them get in touch with R. F. R. . . . . Mexico.—M. A. Co. (Finishes)

"We would like to take this opportunity of saying how we appreciate Industrial Finishing. It is, we consider, by far the best magazine in the world devoted to the industrial finishing field."—B. B., Cheshire, England.

Burning-in Knife

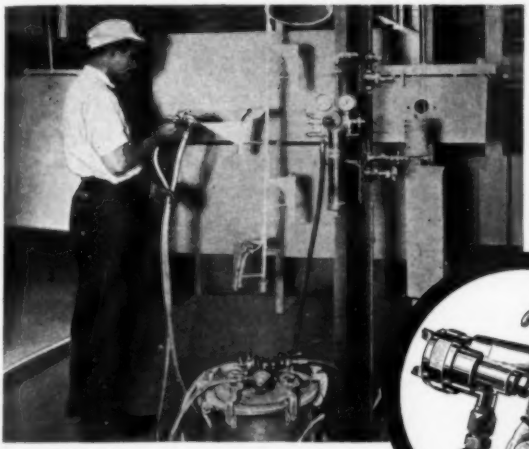
Can you please tell us where we can purchase an Everready burning-in knife, as mentioned on page 42 of Nov. 1939 issue of INDUSTRIAL FINISHING? We have purchased another make but it has not proved satisfactory.—W. E. R.

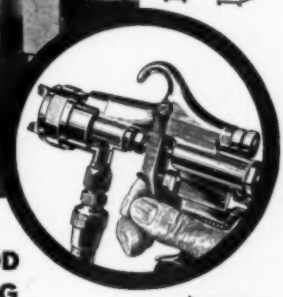
Write H. Behlen & Bros., New York, N. Y.—Ed.

Finishing Briar Pipes

We have read with interest Mr. W. T. Smith's article on the "Production Finishing of Briar Smoking Pipes," in September 1939 issue of INDUSTRIAL FINISHING. The information contained therein has proved of value, not only to us, from a general knowledge viewpoint, but was praised by others here in Australia.

CHECK YOUR COSTS!





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"SPEEDIP" WHIRL ENAMELER—the improved, most economical finishing method . . . speeds up production schedules, cuts finishing costs, saves materials. The complete operation is within the machine. . . . time as little as thirty seconds. Many "Speedip" machines in daily production operation during past few years giving satisfactory and profitable service.

Send for your finished samples today.

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45 RIVER AVENUE · PROVIDENCE, R. I.

We would be interested in learning the price of the automatic spraying and drying machine for finishing briar pipes as illustrated in that article.—Council for Scientific and Industrial Research, S. Melbourne, Australia.

To Finish Display Panels

We are interested in learning the names of various firms to whom we could ship our different paints to be applied by them on wood panels for display work.—O. Varnish Co. (Mich.)

Manufacturers of custom-built finished showcases, fixtures and cabinet work might do this—when not too busy with their regular lines. We have submitted names of a few of these in your state.—ED.

Solvent Recovery

Sometime ago, I believe you ran an advertisement for a company in Chicago or vicinity, who offered to reclaim off-grade lacquers and thinners by distillation. We would like to have their name as soon as possible.—P. V. Co.

Probably you have in mind the Hammond Chemical Service, Hammond, Ind.—ED.

Name Plate Making

We are contemplating going into the manufacture of small nameplates and would appreciate it if you would give us the names of concerns furnishing materials for silk-screen process work. These plates are to be chromium plated, probably 2x10-in. What we require is a process of applying a black background, leaving the letters in chromium. The runs will be short—100 to 500 pieces between changes—so this lettering process must be cheap. Any information will be appreciated.—W. C. Co.

Serviceman's Kit

In November issue, page 42, there is an article regarding a "Burning-in-Knife." This is just the thing our servicemen need and we would like to obtain all the information we can; also the folder that illustrates the burning-in knife.

Another thing that we would like to call your attention to, is that our servicemen would like to obtain a

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little kit with touching-up materials in it. Some time ago we remember of reading an article regarding this in your magazine, but we are not sure what issue it appeared in. If you know where we could obtain such a kit or some information about it, we would appreciate hearing from you.—S. U. Co. (Finishes).

The article you refer to appeared in July 1936 issue, pages 8, 9, 10 and 11, and was illustrated. We know of no concern that puts out such a kit as you want for your servicemen. Probably different servicemen would prefer a different number and variety of items in their service kits. —ED.

Striping Tools

Will you be so kind as to send me the name and address of the manufacturer of mechanical striping tools, as advertised in your journal. If I am not mistaken, the advertisement appeared in an issue about 6 or eight months ago.—L. E. Co. (Electrical Appliances)

In a recent issue of your magazine we note that you are in position to furnish the name of several manufacturers of striping tools for laying stripes on glass tubing. We shall be very glad to receive the names of these manufacturers.—W. D. Co. (Modern Analysis)

Information furnished.—Ed.

Silk-Screen Materials

We have been having our silk screens made, but now we wish to produce our own. Will you please give us the names of manufacturers or wholesalers who sell silk-screen materials. — B. T. Co. (Essential Toys)

Information given.—Ed.

That Foreman Finisher Editorial; Young Man (27) States Case

Referring to your recent editorial entitled, "Our New Foremen Finishers; Where Will We Get them?" in Jan. 1940 issue, pages 89 and 90, I am interested in this too. There is no question about the fact that there is going to be a shortage in really trained men; but after all, how many companies are really interested in securing men to train them? It sim-

(Continued on page 82)

Flo-Lak SYNTHETIC BAKING ENAMELS

A general utility material ideally suited for vending machines, kitchen cabinets and other metal products. Can also be used on glass which requires an opaque or translucent effect.

Easy flowing
High lustre
Excellent retention of gloss
Tough and porcelain-like finish
Highly resistant to acid, alkali and alcohol

May be had in all colors.

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Further information and samples will be gladly furnished on request.

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Styles, Finishes and Colors

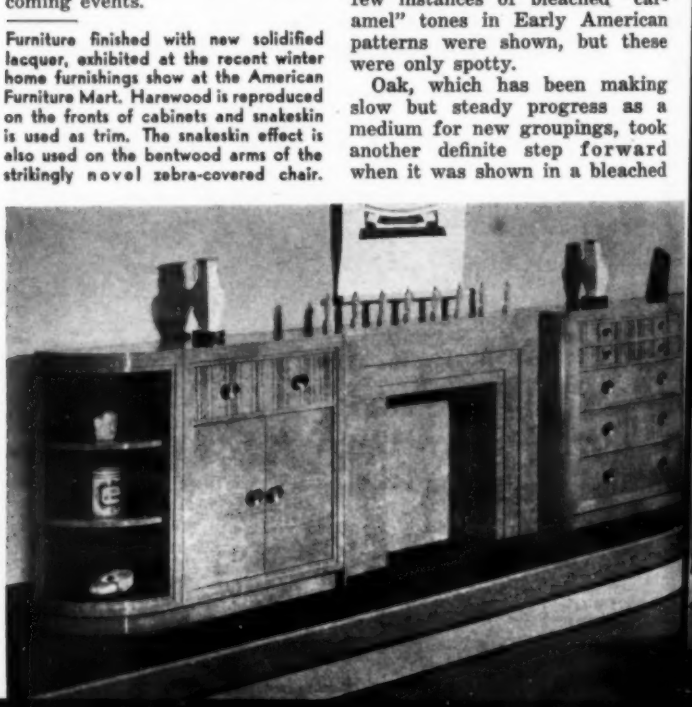
A COMPREHENSIVE survey of new furniture brought into all markets, including the American Furniture Mart, made by the American Walnut Manufacturers Association disclosed that the style change over the past six months was negligible.

While little "drastic" news developed from a style standpoint, certain significant developments in finishes, and new uses of materials cast promising shadows of coming events.

BY ROSALIE FLANK
American Furniture Mart, Chicago

Maple furniture, which has at various intervals favored a brown finish, a red finish and a yellow tone, seems to have settled upon a brown color as its current fancy. Important new maple lines, in dinette, dining room, bedroom and living room lines, featured brown tones, richly waxed and in many instances, expertly shaded. Some few instances of bleached "caramel" tones in Early American patterns were shown, but these were only spotty.

Oak, which has been making slow but steady progress as a medium for new groupings, took another definite step forward when it was shown in a bleached



Furniture finished with new solidified lacquer, exhibited at the recent winter home furnishings show at the American Furniture Mart. Harewood is reproduced on the fronts of cabinets and snakeskin is used as trim. The snakeskin effect is also used on the bentwood arms of the strikingly novel zebra-covered chair.

for Our 1940 Furniture

finish, rubbed with white or pink filler and then given a coat of gold lacquer. Pinkish casts on oak and irridescent silver casts were significant and added to the beauty of simple pieces, which were expertly styled, light in scale and embellished with simple carving.

Kitchen furniture made of oak gained momentum, being combined with chrome, in tables and chair sets, or with enameled touches. One particularly attractive group was shown in a "Sandstone" color with an apple green trim. A maple finish on oak, combined with oyster or pearl white oak, was another interesting development.

Pure white on kitchen cabinets and utility pieces has been accepted as standard; colored hard-

Maple in brown, richly waxed; oak bleached and rubbed with white or pink filler and finished in gold lacquer; kitchen furniture with many colors; champagne and peach tone on birch dinettes; colored leather inlays; brass grilles on cabinet doors; printed lacquer film reproductions of snakeskin for striking decorative effects.

ware has been replaced by chrome so that work bases, cabinets, etc., may blend with any color scheme. Table and chair sets added the only color note, and in some instances the color was cleverly used on the interior of the cabinets.

One manufacturer decided upon a coral and a blue-green turquoise as standard kitchen colors, reasoning that both being of a neutral tone, they would blend with any color pots, pans and accessories. A coral colored top was used on an attractive kitchen table, finished in a tile effect, the tiles being outlined in white. The tile effect was repeated on the back drop of the kitchen cabinet and the chairs were upholstered in the coral color. The same effect was used in the turquoise combination.

Some manufacturers used bits

Metal chairs for porch or garden, finished in pastel enamel. The open work design on the seat and back panel add a new decorative note. Photograph, courtesy of American Furniture Mart.

of colors on the interiors of kitchen cabinets and striped the aprons of the tables in a matching color. Yellow appeared to be a new favorite again, because it is believed to be a neutral color.

In the popular cabinet woods, amber mahogany and mauve-tone walnut were the featured bleached tones, and while the preference for dark woods has again been established, certain 18th Century suites were reported to be selling on a 50/50 basis in the light tones.

A champagne and "peachtone" finish on birch, used on many new dinettes and modern living room groups, has a reddish cast and in many instances replaced the brownish "wheat" tones popular for the past year. It is believed the new warm champagne tone will blend better with pastel colors and dark pieces used in combination with light woods.

Leather Inlays; Brass Grilles

Leather inlays finished in moss green, yellow gold, deep wine, and antiqued brown tones, continued to add a new note of interest to high-style occasional pieces. The use of leather represents a decided trend which has gained considerable momentum during the past six months.

Brass grilles on doors of corner cabinets, curios and radio cabinets, galleries on cocktail and coffee tables, china buffets and dressers, and brass finials on 18th Century chinas, used both in antiqued bronze effect and polished brass form with matching hardware, were other high-styled notes held significant by market observers.

Printed Lacquer Film Reproductions Are Decorative

Newest synthetic finish causing widespread interest at the recent market was a solidified lacquer with paper backing upon which was printed reproductions of various woods, snakeskin, ostrich leather, alligator leather, macassar ebony and many other materials. The solidified lacquer, which is sold to the manufacturer in sheet form, may be applied to any surface including metal, glass, masonite, stone, wood, rubber, etc., by means of a lacquer solvent and when it is applied it takes the form of a synthex veneer as an integral part of the surface processed.

Especially attractive as trim, and adaptable to any surface regardless of shape or size, it is believed the new solidified lacquer offers innumerable possibilities in achieving interesting effects never before possible in furniture.

Painted Outdoor Furniture

Outdoor furniture shown at the winter market stressed new pastel tones both on the enameled gliders and painted wood furniture. Soft greens, cool yellows, pink-beige tones and other pastels were combined with strong colors in striking effects, and gave a new note to the items formerly featured in sparkling white with colored trims. Of special interest was a new baked enamel finish used on a glider line which had been treated with infra-red rays. A special oven equipped with infra-red rays is used for baking the frames. Thus the enamel is baked from the inside as the metal becomes heated. The finish is claimed to be the last word in strength and weather resistance.

Spring steel wire mesh also fashioned an interesting new line of summer furniture, the pieces being finished both in white and pastel tones.

Decal. Decorations

The use of a new 3-dimensional type decalcomanias on juvenile furniture added a new note, the clever use of shadows and color on the new decals giving an effect formerly achieved by wood cut-outs. Enameled suites have returned to high favor in juvenile lines and replaced some of the waxed birch and maple of the past seasons. Decals are generously used, many of the companies tying in with current favorites such as Gulliver's Travels, Pinnochio, etc., for publicity value.

Newest use of materials was a line of lucite tables with plate-glass tops, the lucite being shaped into intricate designs. Formed from standard size tubes, square bars and sheets, and bent with heat to interesting shapes, glass screws held the tops in position. The new lucite tables are expected to retail from $15 to $30.

Treasure tables in which the removable glass top reveals a velvet lined compartment where art treasures may be displayed, period styled refreshment carts, modern offspring of the old tea table, 2-deck chairside tables with compartments for books, and easily accessible shelves for lamps and ashtrays, radio cabinets especially made to accommodate small portable radios, cleverly designed record cabinets, oversized drum tables and many types of magazine racks were items believed slated for popularity in the new fashion cycle.

Lea Mfg. Co. Appoints E. C. Jarm

The Lea Mfg. Co. of Waterbury, Conn., announces the appointment of Edwin C. Jarm of Springfield, Mass., who has served the cutlery industry for the past ten years as development specialist for The Carborundum Co. Mr. Jarm will represent The Lea Mfg. Co. in sales and technical development, giving attention particularly to the cutlery trade and the application of the Lea Method of Finishing to this industry.

Detroit Rex Appoints E. L. McIlhenny Manager of Alkali Division

Detroit Rex Products Co., Detroit, Mich., manufacturers of Detrex solvent degreasers, alkali washers and cleaners, and dry-cleaning equipment, announces the appointment of E. L. McIlhenny as manager of the Alkali Division. Mr. McIlhenny, who formerly worked out of the Cleveland office, will have charge of all sales and service of the company's complete line of alkali cleaners.

Mr. McIlhenny is a graduate in chemical engineering from Washburn College and took post graduate work at the University of Minnesota. He has spent the past 13 years in the metal cleaning industry.

IT IS SMART AND PROFITABLE TO *Recover Used Solvents*

Industry is on the alert to the savings possible through solvent recovery. Hundreds of concerns have submitted samples of used solvent to a still manufacturer's laboratory for test. Almost all of these samples showed profitable recovery possibilities . . . . more than 100 equipment installations have been completed and are in successful operation. The unusual savings and moderate initial cost of modern solvent recovery equipment are strong inducements. Present indications are that concerns using solvents will make use of solvent recovery equipment.

BY D. G. MILLER
Barnstead Still and Sterilizer Co.

MODERN CLEANING methods and the newer finishes have brought about an increased use of solvents in almost every manufacturing plant. More effective—and more expensive—new solvents are now required, in addition to the long used gasoline and naphtha, until solvent expense has become a real item in production costs. Costly solvents are used for degreasing metals before finishing or plating; for stripping finish from rejected lacquered pieces; and for cleaning stencils, spray guns, etc.

Manufacturers of such products as jewelry, novelties, hardware, radio parts, aircraft, razor blades, electrical appliances, metal furniture, machinery, etc., employ ethyl acetate, toluol, butyl acetate, benzol, alcohol and naphtha in their finishing departments. For cleaning purposes, they require considerable amounts of carbon tetrachloride, trichlorethylene, chlorinated hydro-carbons and gasoline.

In many places the increased use of solvent has come about gradually as an unnoticed factor in process changes. As a result, solvent use and expense has not been subjected to the close scrutiny of waste-conscious industry. The useful life of a solvent is all too short. After being used a few times, it is contaminated with oil, dirt, grease, pigments, lacquer and other material. The contaminated solvent is no longer effective and must be discarded. Often the disposal of the used solvent is in itself a problem and an expense. Thus in many plants, solvents costing anywhere from 10c to $1.50 a gallon are being thrown away continuously—often before the supplier's invoice reaches the accounting department.

Used Solvents Become Dirty; Cleaning Restores Them

Nothing in the solvent, thus discarded as useless, has been consumed or lost. It is merely dirty. The impurity content might range from 1% to 30%, depending upon the exactness of the process for which the solvent has been used. The increasing waste occasioned by throwing away such solvents has forced many manufacturers' attention toward the problem of cleaning or reclaiming these solvents.

A little research and experiment has shown that it is entirely practical to separate the pure solvent from the grease, lacquer, dirt or any impurity content, by means of distillation. This idea has been thoroughly developed; distillation has proved to be the only convenient 100% effective method of recovering solvents. This distillation process takes no toll in chemical strength, so the same solvent can be re-used over and over again, by re-distilling it after each use.

The simple principle of the distillation process is to heat the used solvent until it evaporates to bring off the pure solvent vapors. Oil, grease, dirt, lacquer, paint—all non-volatile materials—are left behind in the evaporating chamber. The solvent vapors are then condensed, cooled and pure solvent is delivered ready for re-use.

Steam Heat Preferred

For the most part, steam is used for heating. Water-cooled condensers are employed. This process sounds simple enough, but in actual practice many factors must be considered in providing distilling equipment to do the work, as we shall see later.

At first, the practice of solvent recovery was confined largely to solvent companies who offered substantial rebates to manufacturers for their used solvents. This was the first step in reducing solvent costs. Soon manufacturers found that they could reclaim the solvent themselves, conveniently and at very little cost. This brought solvent recovery stills into general use. Even those companies that use only a small amount of solvent find that with their own still they can cut their solvent costs tremendously.

Operation of the still is simple, requiring no skilled labor—in fact, very little labor of any kind. Within an hour or so and at a cost ranging from ½ to 5 cents a gallon, they can reclaim an entire batch of used solvents to its original state, making it fit for immediate re-use. The savings effected in solvent purchases are substantial enough to pay for the installation of the still in a very short time. In fact, the equipment usually saves an amount equal to several times its cost in the first year of operation. Additional savings appear. For example, cleaning and degreasing operations can be speeded up when clean, fast-working solvent is used at all times. With fresh solvents always available at very little cost, the solvents in vats, tanks, degreasers and stencil-cleaning pans can be changed more frequently.

Typical Savings Effected By Solvent Recovery

The case of one manufacturer is typical of many instances where users of small amounts of solvents have made large savings

with solvent recovery stills. This manufacturer uses approximately 30 gallons of lacquer thinner weekly to clean stencils. At a cost of $100 he installed a small 5-gallon batch recovery still. After deducing his cost of operation, including labor costs which were exceedingly small, his savings are now about $17 each week. Thus, an investment of $100 brought him a yearly saving of more than $600.

A large manufacturer of novelty jewelry used 300 gallons of ethyl acetate weekly. He had been hiring a truckman to dispose of his used solvent each day. His recovery still installation cost less than $600. He found the savings (about $50 each day) large enough to take care of his entire cleaning room payroll. When more expensive solvents, such as carbon tetrachloride, trichlorethylene, etc., are used, even greater economies are effected.

Usual Recovery Cost—One Cent per Gallon

Naturally, in cases where less expensive solvents are involved such as naphtha, gasoline, etc., the savings brought about by solvent recovery are not so spectacular, but they are worthwhile. The cost of recovery is usually about one cent per gallon, which is but one-tenth the cost of the cheapest solvent.

With such savings as an incentive, hundreds of manufacturers have installed recovery stills in the past five years. These stills range in capacity from a few gallons to thousands of gallons daily, and in cost they range from less than $100 to several thousand dollars. Because of the wide diversity in solvent use and plant conditions, each job must be treated more or less as a special problem so that a still of suitable type and capacity can be furnished. We can discuss briefly the factors which determine the construction and operation of the still.

Factors to Consider in Selection of Recovery Still

First, the nature of the solvent (or solvents) to be reclaimed must be considered; its chemical characteristics should dictate the materials chosen for the fabrication of the still. The metals used must be able to resist corrosion and give reasonable service life without trouble. Furthermore, the type of still, as regards its operation, depends upon the solvent to be recovered. A still that would recover carbon tetrachloride, acetone, thinners and other low-boiling solvents could not be used for high-boiling solvents. Different operating methods must be employed.

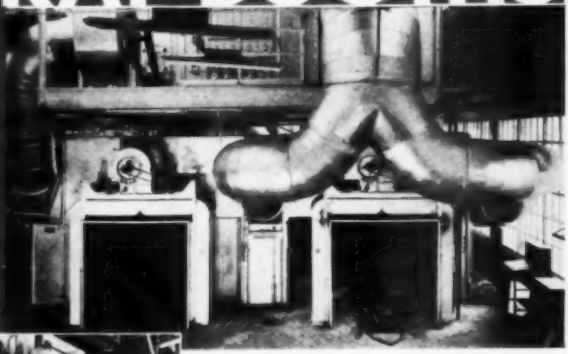
Full information regarding the used solvent—its nature, boiling range, percentage and kind of impurities contained, etc.—should be available. As most finishers prefer not to attempt an analysis of their solvent, they usually send a sample of their used solvent to a still manufacturer for analysis and laboratory scale recovery test.

Kind of Heat; Capacity; Four Types of Stills

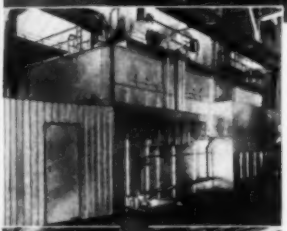
Next, the method of heating the still must be decided upon. On this point, we are guided by the boiling range of the solvent and the heating mediums at our disposal. The possibility of em-

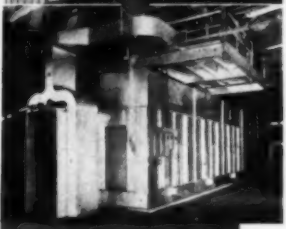
(Continued on page 21)

Hydro-Filter SPRAY BOOTHS



Mahon Hydro-Filter Spray Booths in two body production lines of the Finishing System for a large automobile plant





The illustration above shows a small parts booth which is part of the same installation.

. . Adaptable to Products of Any Size or Shape

Mahon Hydro-Filter Spray Booths are today serving every industry where finishing constitutes an important production operation. Constant development by Mahon engineers, to meet the demands of this highly specialized field, assures purchasers of the last word in efficient economical operation. Each Mahon installation is designed around the particular product to be painted . . . every detail is carefully planned to produce the desired results in production finishing. If you are contemplating the purchase of a complete Finishing System, or any unit thereof, it will pay to call in a Mahon engineer now . . . consultation will not place you under any obligation. Write today.

THE R. C. MAHON CO.

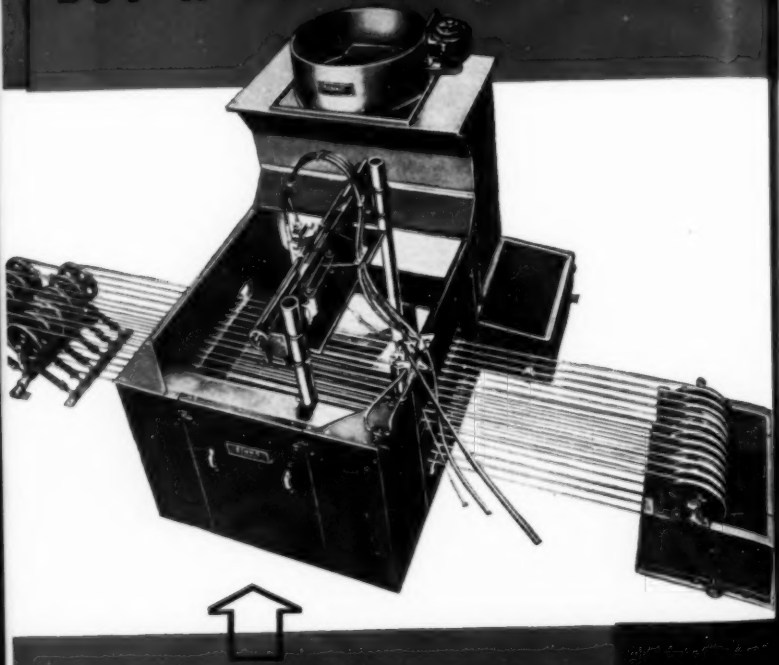
DETROIT — — CHICAGO

Designers and Manufacturers of Complete Finishing Systems, Metal Cleaning Machines, Rust Proofing Machines, Hydro-Filter Spray Booths, Ovens of All Types, Hydro-Foam Dust Collectors and Many Other Units of Special Production Equipment

MAHON

Almost Human

BUT A LOT MORE EFFICIENT

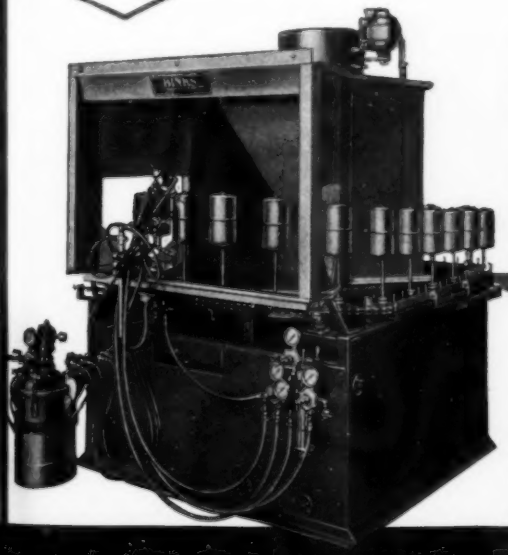


The BINKS Automatic Reciprocating Machine is another engineering marvel. It is designed for finishing wall boards, linoleums, range and refrigerator parts, shingles, and other flat objects. Here, again, the great economy of the BINKS system is evident. The battery of THOR Model 7-R Automatic Spray Guns moves across the conveyor at a constant speed insuring perfect finishing. They, too, shut off between pieces. The resulting work is superior to that done by a skilled spray gun operator.

BINK

The way BINKS automatic finishing equipment works is almost uncanny. Take, for example, the BINKS Automatic Spindle Machine illustrated below. This machine is designed to finish clocks, golf balls, insulators, lamp fixtures, and hundreds of other small items which have more than one surface to be finished.

As each unit approaches the newly perfected BINKS Thor Model No. 21 Automatic Spray Guns, the spindle on which it rides starts to rotate quickly and smoothly. The guns follow the unit across the booth giving the object a beautiful uniform finish. They then shut off automatically and move back to repeat the operation. The perfect timing of this machine results in greater production at a per unit cost far below hand finishing. As many as 15,000 to 20,000 units can be finished in one day.



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on your business letterhead for BINKS' complete catalog and data book. It gives full details on these and other time and money saving spray painting outfits by BINKS.

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An attention-compelling element can be applied to your product as surely as the art study draws your eye to this page.

Write us about your finishing problems . . . no obligation whatever.

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ploying steam should be considered first. The maximum steam pressure available at the point of the proposed still installation should be determined. In fact, the question of steam pressure often determines the type of still and its operating procedure. If the plant cannot provide steam to heat the still, it is often quite practical to install an auxiliary steam boiler with the still.

When non-inflammable solvents are involved, direct-fired gas or electrically heated stills may be used. Generally speaking, however, every possibility of using a steam heated still should be considered before other heating methods are sought.

The quantity of solvent available for treatment will determine the still capacity required, therefore an estimate of the amount of solvent to be reclaimed per day or per week should be made. Still capacities are usually rated in terms of gallons recovered per hour. Batch type stills are also rated in batch capacity, that is, number of gallons of used solvent the still will hold at one charge.

With this full knowledge of the recovery problem—the solvent data, characteristics of the heating medium, and capacity required—as just outlined, the exact size and type of recovery equipment necessary can be defined. Four different types of solvent recovery stills have been developed: 1) The standard or simple atmospheric type still; 2) the sparge type still; 3) the vacuum still, and 4) combination type stills. *A brief outline of each type and its uses will be given in the last half of this article, to appear next month.*

View of Hilo Varnish Corp.'s exhibit booth at the recent 6th International Heating & Ventilating Exposition, at Lakeside Hall, Cleveland, Ohio, Jan. 22-26. The entire display was built around the theme of an art gallery, Hilo showing its masterpieces of protective and decorative finishes. More than 200 visitors viewed the exhibit.

Electrical Modernization

NEEDED IN PRODUCT FINISHING ROOMS

BY FRED MERISH

Second installment of an article wherein the author reveals many interesting and startling facts uncovered in a survey of the electrical equipment in finishing rooms.

HEAT, OF WHICH there is much in product finishing departments, subjects wiring and cable to deterioration; so do other factors, such as solvents, acids, alkalies, moisture, sunlight, arcs, or other forms of external heat. The insulation on wires and cables in many plants is deficient, causing breakdowns and expensive adjustments. Brittle, dried-out wire insulation was found in many finishing departments visited. Where vibration is great in a plant, even though outside of the industrial finishing department, old dried-out insulation soon develops fine cracks and breaks away. That may mean a "short," with consequent stoppage to production or even a fire.

Deterioration of Insulation

Foremen finishers reported that wire had to be replaced frequently because of heat-rot, which indicates that these plants were using unsuitable insulation. Where processing produces much heat, it is wise to use heatproof insulation. Where there is much oil, grease, or corrosive fumes, insulated wire may be procured having high resistance against these factors. We saw insulation around pickling tanks and other cleaning lines that was almost off, due to the corrosive action of fumes—obviously hazards to workers, if not fire hazards.

Low susceptibility to combustion and explosion are advantages of modern insulation. Sometimes, large emergency overloads are necessary to meet production demands. The use of cables having high heat-resisting characteristics is a wise investment here. Steam, dampness, dust and dirt deteriorate wire and cable. From this field study, we can report that many finishing and cleaning departments should be re-wired merely because the insulation is antiquated and inefficient.

Why Costs Went Up After "Modernization"

In one plant, the management complained that after having modernized the electrical equipment, the cost of current went

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The Fast-Working Versatile Synthetic Enamel Stripper

For announcement purposes, it's enough to state that Lea Synstrip takes off the "hard-to-remove" baked synthetic enamels and baked Japans as slick as a whistle and doesn't do a bit of harm to the base metal—even if it is aluminum or zinc. We know you will be enthusiastic about this fast-working stripper once you put it to a test. Send for a trial gallon—$1.75 per gallon, f.o.b. Waterbury. Also shipped in 5, 30 and 50 gallon containers with corresponding reduction in prices. Prices and full details given in literature shown at the left.

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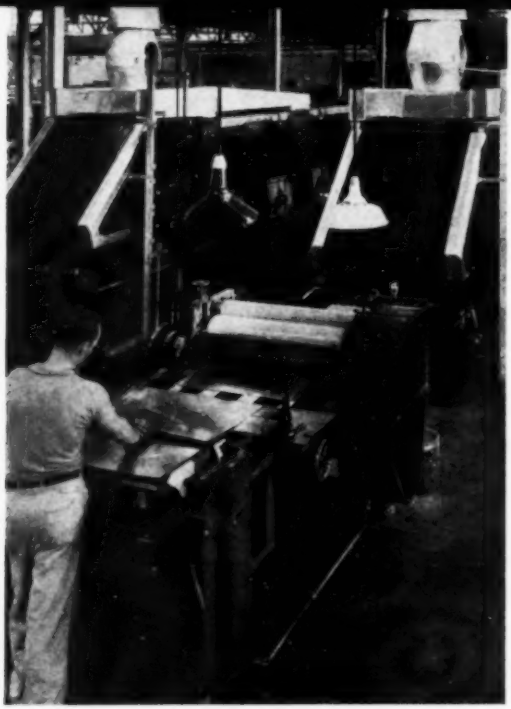
Specialists in Fast-Cutting and Clean-Working Buffing and Polishing Compounds—Suppliers of Platers' Materials



Roller coating flat sheets, followed by a conveyor oven bake, gives continuous rapid production and uniformity in finishing. Modern electrical equipment that is in first class condition assures safety for the investment, the operations, and the workers.

up. After inspection, we found that new circuit breakers, lights, transformers, panelboards and other controls had been installed, *but the old wiring circuits had been retained "as is."* Instead of saving money on such modernization, this plant was losing more than before, because the increased efficiency of the modernized equipment placed a greater tax upon the antiquated wiring than before. As a result, electric current bills went up, much to the surprise of the management.

Breakdowns run high where electrical hook-up and equipment are "haywire." Too often on this field study we found workers and machines idle, waiting for repairs to be made. Disrupted production is a loss that makes costs go up, kills business, and affects the quality of a product adversely. In one plant, furniture pieces were being finished for a definite delivery date, but the defective cable splices in the electrical system broke down completely, delaying production so badly that part of the order was cancelled, entailing considerable loss.

Repairs; Maintenance; Lighting

Repairs and maintenance are high on inefficient, outmoded electrical systems. Maintenance men reported that after adequate wiring and other modern electrical equipment was installed, repairs and maintenance expenses dropped as much as 70%.

Although we have no definite

(Continued on page 28)

INVESTIGATE

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This view shows a section of one of our laboratories at High Point, N. C.

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Alcohol resistance, print resistance, flow, adhesion, clarity, toughness, mar-proof, color matching, etc.—*all of these qualities (and many others) are built into LILLY FINISHES as a matter of course.*

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# of these two modern *Lilly* Plants we ties frequently emphasized as unusual

at
Indianapolis,
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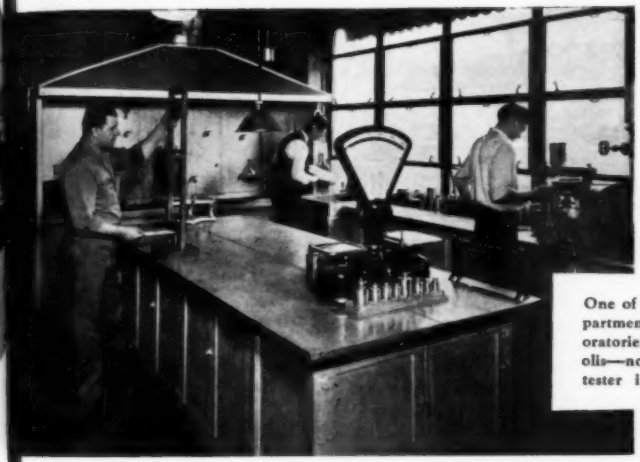

One of the testing departments in our laboratories at Indianapolis—note the impact tester in foreground.

Specializing in Wood, Metal Finishes

Our Indianapolis staff of experienced technicians and experts is augmented by a similar staff at our High Point plant. Constant research and development work is being carried on. Raw materials and finished products are carefully tested and checked to insure modern and practical finishes of uniform high quality. Our technical and service staffs of both Lilly plants are at your service.

Lilly Varnish Company

Indianapolis, Ind.

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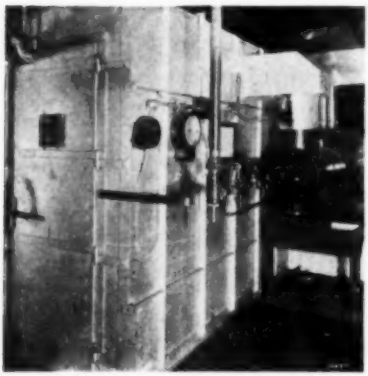
data on rejects, spoilage of material and waste, it is obvious that when operation runs smoothly, such losses will be low. Unless the finishing department is "up to snuff" electrically, operation will not be dependable and such losses will be very high.

Streamlined lighting is an important part of electrical modernization. "Seeability" is bad in many product finishing departments and that is a deterrent to tiptop workmanship. Since so many people buy through eye appeal, a poor finish means a poor product throughout, although the job under the finish may be first-class.

In one buffing room the average illumination, when checked with a light meter, was only 5 foot-candles. Dark aisles, glare and deep shadows were accident hazards — accomplices of poor production. Two months later, after modern lighting had been installed, we visited the same plant. The average illumination was 40 foot-candles, there were no dangerous shadows, no glare, no dark aisles to put workers in the hospital. The management reported that production had increased approximately 20%, rejects were reduced to a minimum, and the quality of work had improved considerably. The streamlined lighting was much easier on the workers' eyes and they turned out more and better work.

Bake ovens are now widely used in industrial finishing . . . . and some electrical equipment is used in connection with their operation, or in their vicinity. It's important that the electrical wiring, insulation, switches and contacts are adequate to prevent any possibility of an explosion or disastrous fire.



The Fate of Fuses

Even an inadequate fuse can be an expensive proposition to product finishing. In one department an electric oven was originally fused with 600-amp. barelink fuses. Workmen were adding links up to 750-amp. and sometimes the fuses were burning out two or three daily. Fuses of modern design were purchased. From February to September, the same fuses were still on duty and going strong, not only reducing fuse expense but preventing costly delays. In another plant, where production was delayed three or four times weekly because of fuse outages, a circuit-breaker was installed; according to the management it saves $60 weekly in time formerly lost.

Many circuit-breakers are so old and inadequate that they should be replaced. One plant experienced a serious outage and loss to production because a circuit-breaker, meant to be a safety valve electrically, failed to function. The plant had grown in size since installation and the switchgear's rupturing capacity was no longer suitable. When old break-

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ers fail because short-circuit current increases to the point of exceeding their rupturing capacity, damaged equipment, hazards to life, property and higher production costs, usually follow — not only in the product finishing department but all over the plant.

Whether electrical defects exist in or outside the finishing department, they affect product finishing directly or indirectly. If production is held up anywhere along the production line, that means delays in the finishing department, bottle-necks, and a hectic scramble to get things running smoothly again.

Electrical adequacy in all its forms — lighting, motors, wiring, explosion-proof fitting and controls—is essential to top-quality finishing, whether spraying, dipping, cleaning, rustproofing, rolling, screening, tumbling, brushing; whether working with fillers, primers, thinners, enamels, paints or lacquers on machine tools, furniture, refrigerators, pencils, cables, automobiles, mirrors, signs, novelties or any of the many other products that go to market with an attractive facial through the wizardry of modern product finishing methods.

Yarnall Paint Company Holds Annual Sales Convention

With its entire Eastern sales force attending, the Yarnall Paint Co. held its annual Sales Convention at the Penn Athletic Club in Philadelphia, on January 4 and 5.

Meetings were presided over by B. F. Swackhamer, Sales Manager. Speakers included William MacKnight, Vice-President & Treasurer; Arthur DeMarco, Trade Sales Technician; and Joseph McKinley, Industrial Technician; with Harold W. Scott, Vice-President of the Pennsylvania Co., as guest speaker.

The convention opened at the general offices of the company where the members of the sales force were conducted through the laboratory and factory in groups. Included in activities were personal conferences by salesmen with the executives in charge of different departments, a review of the products in the trade sales line, a review of the industrial finishes in the line, paint styling and the sales and advertising program for 1940. The convention closed with a banquet at which achievement prizes, door prizes, and souvenirs were presented.

Spray Painting School to Open

The DeVilbiss Co., Toledo, Ohio, announces the schedule of their training school for the first half of 1940, to be held in the company's Toledo plant. The school is open to industrial painters, master painters, automobile refinishers and all others interested in learning the technique of spray-painting and the use and care of spray-painting equipment.

Each training period lasts for one week. Classes begin on March 4th, April 11th, May 6th and June 3rd. Special rates in Toledo hotels and boarding-houses near the plant have been secured by the company for men attending the school.

These classes have been well attended in the past because of the facilities for study otherwise unobtainable. It is advisable to enroll in the school as far in advance as possible, since the size of the classes must be limited, and since there will be no training period other than those announced.

Dr. A. Lloyd Taylor Joins Oakite Technical Staff

Expanding its chemical research facilities and services, Oakite Products, Inc., New York, N. Y., (manufacturers of industrial cleaning materials) announces the appointment of Dr. A. Lloyd Taylor to its Technical Staff. Dr. Taylor will concentrate his attention primarily on chemical research and development of cleaning materials for production and related cleaning operations of major industries. He will also devote part of his time to technical field service, co-operating with the men comprising Oakite's nation-wide service organization in the application of the different specialized cleaning materials originated and developed by the company during the past 30 years and now widely used in numerous product-processing and plant maintenance operations.

EGYPTIAN high-bake N.F.R.

A tough, mar-proof, chemically resistant synthetic finish for all types of metal products . . . Extremely durable. Increases resistance to abrasion and other forms of wear so detrimental to ordinary finishes.

1. **Wide range of baking temperatures.**
2. **One coat directly on smooth metals. No priming coat necessary.**
3. **Special undercoats for rough castings which air dry for sanding yet may be baked as a composite finish after application of Egyptian High-Bake N. F. R.**
4. **Applied by spraying or dipping. No special equipment required.**

Egyptian High-Bake N. F. R. comes in a wide range of colors as well as black, white, and clear. Colors are furnished in high gloss . . . Clear may be had in high or medium gloss . . . Ask for details and color chart.

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Rockefeller Center, New York

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EGYPTIAN Superior FINISHES

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For general protection of parts and polished surfaces, for masking purposes, striping and many other important uses.

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The Paper Backed Tape

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Fine Cloth Tape

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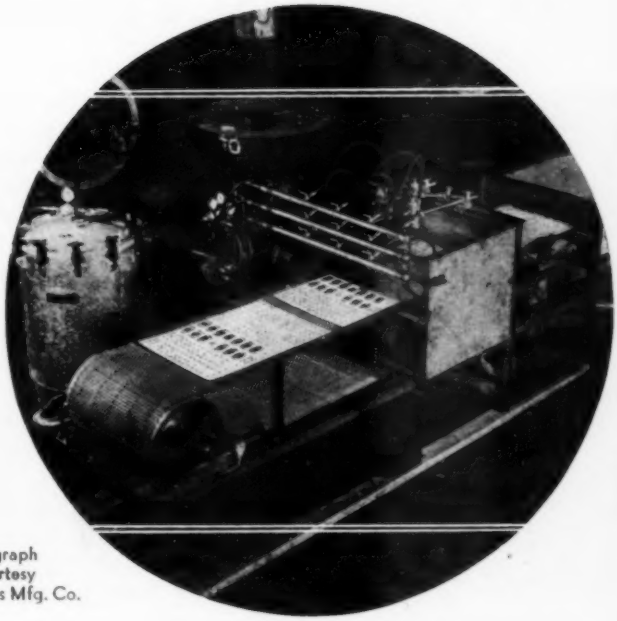
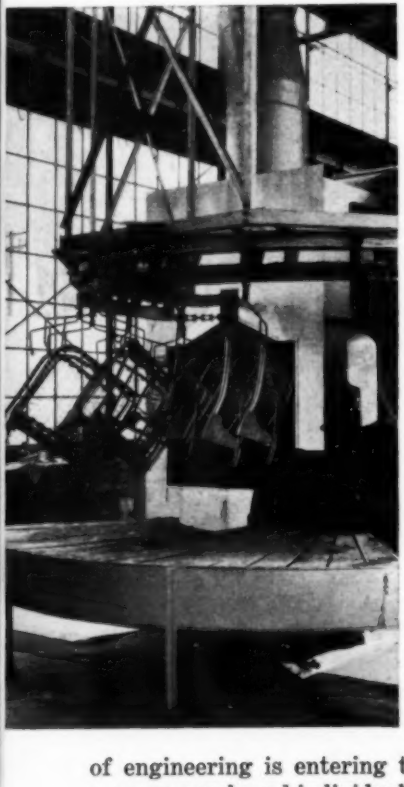


Photograph
by courtesy
of Binks Mfg. Co.

A Review of Equipment

for preparing materials and conditioning surfaces; putting on and drying finishes; handling work in process; decorating and polishing to produce the final touches.

A Review of Equipment



THE past year has seen further mechanization of all operations and processes involved in product finishing. To be more specific, we now have a more varied and more improved line of equipment and apparatus for the:

1) Preparation and conditioning of the surfaces to be finished;

2) Preparation, application and rapid drying of all finish coatings;

3) Handling and transferring of products that are being finished;

4) Putting on of various decorative effects;

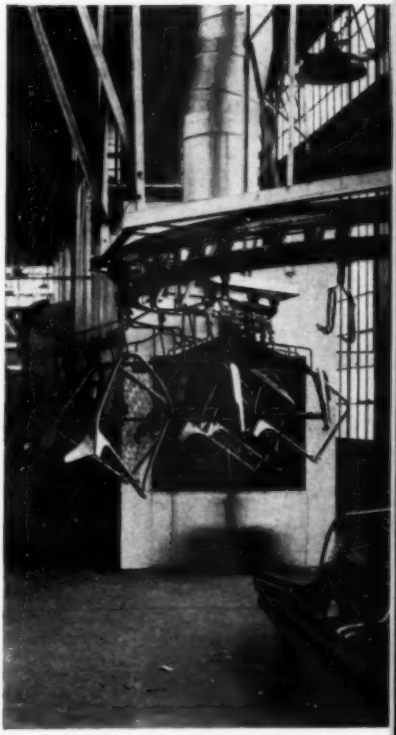
5) Rubbing, buffing or polishing of finish coatings on certain products.

More executive attention is being directed toward finishing room procedure, and more of the highly specialized type of engineering is entering the picture. Where formerly a concern purchased individual spray booths, dipping machines, roller coaters, ovens, etc., as required, and then let things take their course under local supervision, the trend now is to call in a competent engineer to plan, lay out and install a complete system of economical precision finishing.

Manufacturers whose problems include the handling and

FOR THE FINISHING ROOM

finishing of products on the basis of large production and low cost, have found that the help of an engineer of this type, with a wide range of experience, is invaluable. The specialized experienced required for this type of work can not be obtained in any one plant; it is acquired from experience in many different plants where different problems and conditions are presented.



In most plants today the services of an engineer versed in various methods of finishing with production equipment, presents the greatest opportunity for improvement. Generally speaking, the improvements to be made are such that they will be self liquidating, which makes the problems both interesting and attractive.

Some years ago the ratio of finishing equipment to other machinery was extremely low in most plants, but today the importance and money involved in finishing equipment has become much greater. As an example, during the past year a small manufacturer of high class metal cabinets, having not more than $20,000 worth of metal-working machinery, installed a finishing system that cost more than $50,000.

This has proved to be an excellent investment and the manufacturer is extremely successful.

The place of the water-wash booth in industry has been definitely established. Manufacturers who are leaders in the industry have not hesitated to spend thousands of dollars to revise their finishing room layouts and install the latest type of water-wash booths. Along with this has come complete air conditioning of the finishing room by putting the room under pressure and gently blowing in clean filtered air so that any possibility of dust or dirt may be eliminated.

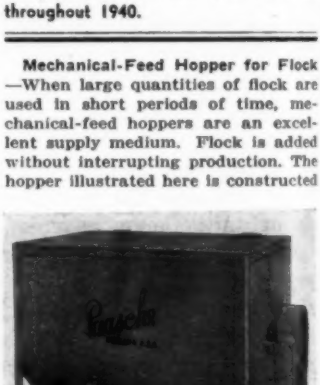
The trend toward automatic spray machines is steadily increasing. Machines of this kind have been developed to handle a great variety of products. One of the large manufacturers of complete spray equipment reports that the greatest percentage of their inquiries from industrial plants has been concerned with automatic spray finishing equipment, both of the reciprocating-arm type and the automatic spindle machine type. In fact leading spray equipment manufacturers can show you and tell you more than enough along this line to fill a thick book—and an interesting book of profitable information too.

Manufacturers of all other types of equipment for the modern finishing room have made substantial progress in the development and improvement of their respective products. With business looking brighter, more and more manufacturers are interested in investing in machinery that will increase their production. For example, one of the equipment manufacturers writes:

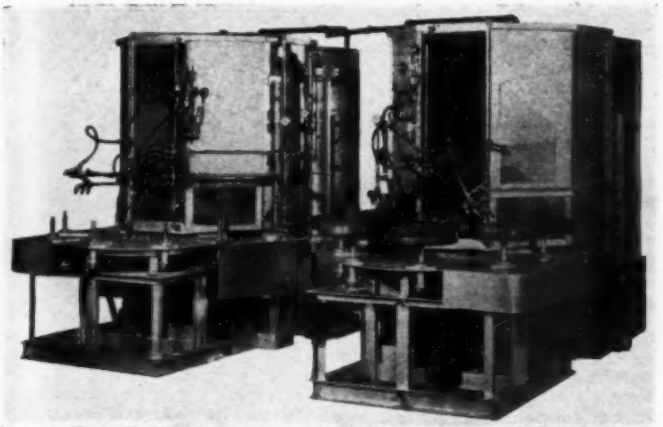
"Our business has shown a splendid increase on these automatic spray machines. The demand for conventional spraying equipment, such as spray booths, pressure material containers, exhaust fans, spray guns, etc., has been very satisfactory, and our 1940 plans provide for a much larger manufacturing schedule. We can see nothing but good ahead when comparing the forthcoming year with those that have passed. In fact, we are very optimistic."

Perhaps the most outstanding of all industries to spend money for industrial finishing equipment during 1939 has been the airplane industry and it certainly looks like this will continue throughout 1940.

Mechanical-Feed Hopper for Flock—When large quantities of flock are used in short periods of time, mechanical-feed hoppers are an excellent supply medium. Flock is added without interrupting production. The hopper illustrated here is constructed



For use in the spraying of flock.



A pair of automatic rotary-type spray machines, one unloaded and the other loaded.

of heavy steel, electrically welded to an angle-iron frame, and equipped with hinged cover. Ball-bearing non-clogging screw type feeder and agitator are driven by explosion-proof geared-head motor.

Operation of trigger on gun automatically controls flow of flock. Type FF61 indexed air-distributing head provides accurate adjustments for various types of material. Is equipped with water-and-dirt separator and air regulator to provide clean dry air at proper pressures. One of these mechanical-feed hoppers can be built into a flock reclaiming booth as a unit for use with automatic or semi-automatic equipment.—Paasche Airbrush Co., Chicago, Ill.

Automatic Spraying Machine (Rotary DC3)—The accompanying illustration shows two heavy-duty rotary machines for spray painting large heavy objects at a comparatively high rate of speed. This machine has adjustable guns, is compact and completely coats approximately 950 pieces per hour. The variable speed drive allows a minimum production of about 350 pieces per hour. It is adaptable to many different objects which can weigh up to 150-lbs. each. Incidentally, this particular machine has a water-wash exhaust chamber. Note also the dusting nozzles for drying the hubs before painting.—The DeVilbiss Co., Toledo, Ohio.

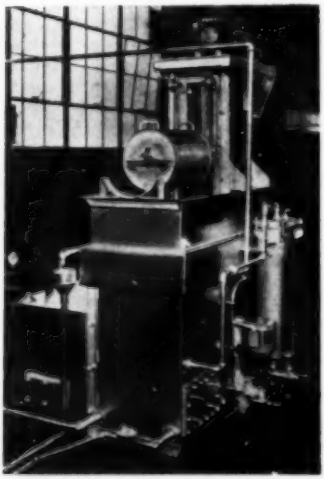
Roche "DS" Painting Outfit—A single-diaphragm compressor; pulsation chamber is one piece with compressor head. Special composition rubber diaphragm gives many hours of life under hard usage. Sealed crankcase is pre-lubricated for life of compressor. Comes complete with Roche "J" internal-atomization bleeder-type adjustable spray gun and quart pressure cup. Gun is

A small portable outfit with ½-hp. motor.

equipped with flat spray nozzle and with moisture filter, easy to drain. Outfit also includes 12 feet of ¼-in. braided hose and connections, 2 "V" pulleys with "V" belt and handy carrying handle. Gives 2.2-c.f.m. actual air delivery at 26-lbs. working pressure.—Binks Mfg. Co., Chicago.

One-Dip Degreaser with Rotating Baskets—A new development in which degreasing can be applied to cup-shaped work. It is used on work that otherwise would tend to trap solvent and cause a heavy carryout. Work comes from the degreaser clean, warm, and dry. Engineering balance of heat input against production, together with high capacity water-jacket condenser and other features, which maintain the vapor line at the mid-point of the condenser, have effected further cleaning economies.

This degreaser consists essentially of a one-dip or liquid-vapor design with storage tank and a special automatic elevator mechanism which raises and lowers the rotating baskets. A continuous filter is used to keep the boiling chamber free of insoluble material, and a continuous operating solvent still is used to remove oil contamination. By this means the work is always immersed into clean solvent and a final pure-vapor cleaning action is given as the work is raised out of the boiling solution. A clean solvent storage tank is located at the rear side of degreaser.

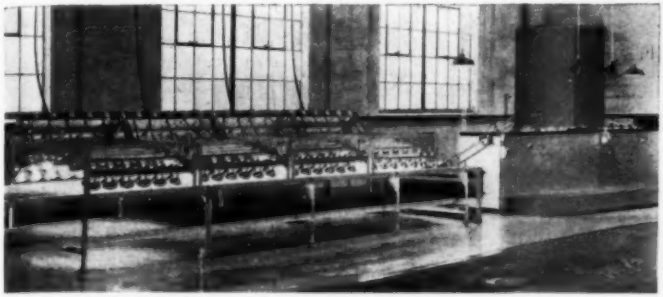


One-dip, rotating basket design of Detrex Degreaser, equipped with continuous filter and continuous Detrex Solvent Still. This view is from the loading-unloading station, and shows the formed rest for quickly placing and centering a basket of work on the driven spindle.

The drum-shaped mesh basket with which this machine is equipped for rotating and draining the work, fits over a spindle which is attached to the elevator mechanism and has a gear and pinion device to cause rotation of the basket during its descending and ascending travel. A push-button station located adjacent the loading end operates the elevator drive mechanism, while limit switches and a time interval control govern the travel of the elevator and basket. After the set time interval for cleaning in the boiling solution, the load returns automatically to the loading-unloading station. — Detroit Rex Products Co., Detroit, Mich.

During the year of 1939 we added three new patterns to our list of stock graining plates—a beautiful crotch mahogany, a stump walnut and a butt walnut. This gives the manufacturer 26 patterns to select from.

Infra-Red Ray Tunnel—"The problem of getting a satisfactory bake on polished stainless steel hub caps has been successfully achieved in the infra-red ray tunnel illustrated herewith. An entirely new high gloss enamel has been developed for this unique magnetic stenciling process. Infra-red ray lamps thoroughly bake 18,000 caps in 8 hours, on a 5-minute

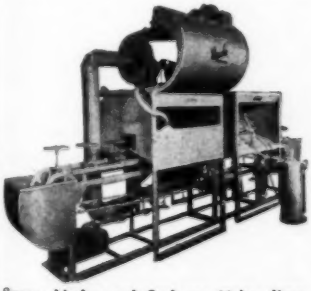


Conveyor is crowned with infra-red ray lamps fitted with 7⅝-in. gold-plated reflectors.

baking schedule. This tunnel is 17-ft. in length, and reflectors are crowned above a 60-in. wide conveyor. The peak temperature obtained with 256 7⅝-in. diameter 24-karat gold-plated reflector units, equipped with 260-watt heaters, is 450°F. This tunnel requires small space and eliminates costly handling. One man feeds the stenciling machine and one man packs the finished product." — Infra-Red Ray Devices, Inc., Detroit, Mich.

Automatic Flock-Coating Machine —For spraying binder and flock on flat metal discs. The complete unit includes a conveyor 17-ft. long, 4-ft. wide and 3½-ft. high, with roller chain on ball-bearing steel sprockets, and 28 rotating spindle assemblies.

The metal discs are loaded manually; as they pass through the first coating station they receive a uniform application of adhesive. Then they enter the flocking station where they are again rotated while flock is applied by means of a continuous flow nozzle. The flock is in a hamper which is equipped with a variable-speed motor-driven screw that feeds only as much flock as is required. All excess flock or overspray is picked up by this same flock distributing unit, recirculated and used over and over again, so there is practically no waste of material.



Sprays binder and flock on 10-in. discs.

The amount of flock to be applied to the discs is accurately controlled and a uniform application is assured. Conveyor speeds will permit coating from 5 to 25 pieces per minute. Daily production of 10-in. discs is 11,000. The unit includes two automatic air-brushes, a 12-gallon "clamptight-

We notice an increased use of pressure striping units—not just a striping gun with cup, but a pressure system complete with pressure tank, fluid hose and striping tool to apply stripes of any type, size or quantity. Many manufacturers are now using this type of equipment to apply 5, 10, 15 and even more stripes at one time and in one operation.

cover" pressure-feed material tank, airconditioning unit, special flocking and reclaiming booth with material hopper and agitator, and ventilating unit for the complete outfit.—Paasche Airbrush Co., Chicago, Ill.

Combination Graphite Coater and Brushing Machine—Coats flat sheet or strip stock, such as asbestos, etc., with graphite on both sides. Immediately after coating, the sheets are caught by feed rolls and brought to brushing roll stations (four in this case, two top and two bottom brush rolls). The stock leaves the machine with both sides coated with this graphite solution, and polished to present a better surface. The tendency of the graphite in solution to settle to the bottom of the container is overcome by use of special roll construction and an agitator in the lower pan, in conjunction with a pump circulating device.

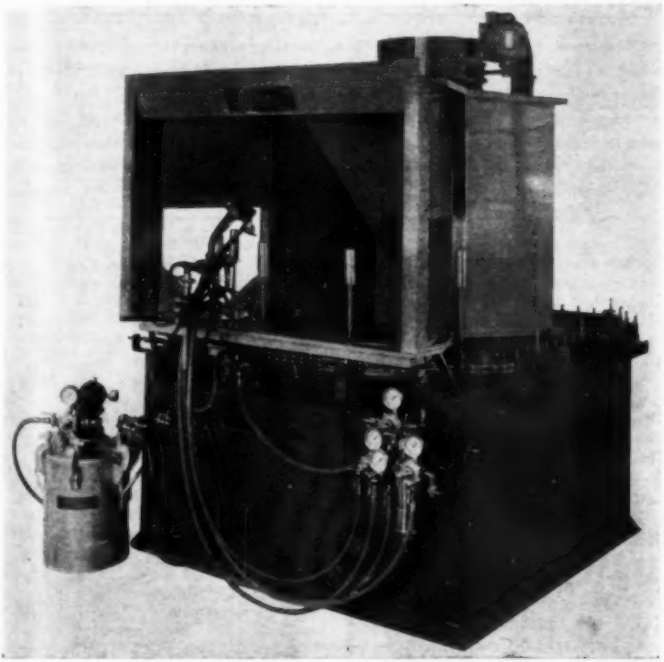
The top and bottom coating rolls are rubber covered with patented longitudinal corrugations in the rubber to give traction to carry stock through at a uniform peripheral speed and to deposit sufficient graphite on the stock.

The scraper or doctor rolls form a crotch with the coating rolls, into which the graphite solution is pumped. One doctor roll is in front of a top coating roll, and the other doctor roll is back of a bottom coating roll. The graphite solution in these roll crotches is brought to the height of overflow pipes, where it returns to a sump pan directly underneath. To prevent settling of graphite in this pan, a slow-moving horizontal agitator is used so the pump can continue circulating an even consistency of the graphite.

This machine carries stock through at a speed of about 77-ft. per minute, and does many times more work with less labor and time than the former method of hand and machine combination. With or without changes, the same machine can be used for other work, such as coating and brushing on wax, etc.—Chas. E. Francis Co., Rushville, Ind.

A great deal of interest has been displayed, especially by furniture manufacturers in the application of hot lacquer. Manufacturers of equipment have done a great deal of experimental work attempting to produce a satisfactory spray outfit for the application of hot lacquer. After having brought out several trial models, the leading spray equipment manufacturers produced satisfactory working outfits for heating this material.

Roller coating followed by rotary brushing . . . . for applying graphite, wax, etc., to sheet and strip stock.



A new automatic machine for finishing small products that can be placed on conveyor.

Automatic Sprayer—A spindle-type automatic spraying machine readily adaptable to all types of automatic spray finishing for clocks, battery boxes, golf balls, insulators, lamp fixtures and many other similar items. It utilizes the newly perfected Binks Thor Model No. 21 automatic spray gun connected with a 3-way valve that opens and closes the gun. In this way the gun sprays only when it is following the revolving products to be finished. A companion unit to the Binks automatic reciprocating machine for spray finishing flat ware. Like the reciprocating machine, the new spindle-type unit can be furnished with either a dry or water-wash spray booth.—Binks Mfg. Co., Chicago, Ill.

Speed-Bloc Portable Sander—Driven by compressed air. Adaptable to both sanding and rubbing; a precision tool, built for continuous trouble-free service. All essential parts subject to wear are made of alloy steel, hardened and precision ground. Motor is housed in a die-cast aluminum-alloy case. The back and forth movement of the piston moves the sanding block. Drive pin "floats" in the shoe which provides for flexibility of sanding pad. A leather boot prevents dirt from entering the motor. At 60-lbs. air pressure, the sanding pad makes 3000 strokes per minute. The stroke is ⅝-in.

Here is high speed with low air consumption—6-cu.ft. at 60-lbs. operating air pressure. Can be conven-

In our line of work, we have noticed that for oil or gas-fired heating equipment used in connection with drying ovens, the trend is toward equipping these heaters with complete sound safety devices. These not only benefit the company or corporation with cheaper insurance, but also safeguard the lives of their employes working at or near this equipment. We have developed this type of fool-proof equipment, called the "Dry-Sys" Flame Detector Unit, and we hope in the very near future to write an article about this equipment for your magazine.

iently operated in all positions. The motor stops automatically when the operator sets machine down. No air is wasted. The water (if wet sanding is being done) also cuts off automatically. The sanding pad is flexible, which makes possible the sanding of convex or concave surfaces. It sands close to edges and corners, leaving very little for hand "pick-up." Has a water connection with jets on each side of the machine. The water plays on the work as you

A portable machine for sanding and rubbing.

sand, preventing the abrasive paper from "loading." A special synthetic sanding bloc is available for gas, benzine or oil sanding. — Sterling Products Co., Detroit, Mich.

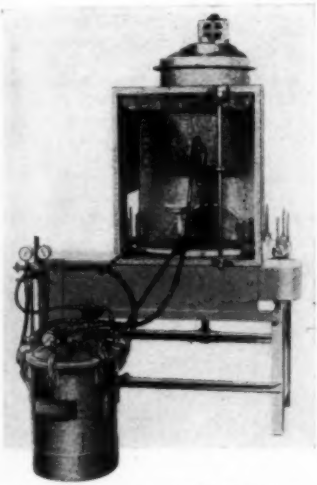
"Aero-Dehydrator"—A device developed for dehydrating or removing excessive moisture from compressed air lines coming from the air compressor. It is common knowledge among finishers that excessive moisture in the compressed air used for spraying is definitely harmful to the finish. With humidity at a high point, as it is during many months of the year, often as much as a pound of water is entrained in the compressed air in the form of superheated vapor to each 1000-cu.ft. of air taken in by the compressor.

Where the consumption of air amounts to 125-cu.ft. per minute, approximately one gallon of water must find its way out of the lines every hour. Unless some practical means is adopted for its removal, it can only escape through the spray guns.

The Aero-Dehydrator is capable of reducing the percentage of water in the air lines 85% to 90%, using water as a coolant through the dehydrator, and as much as 90% to 95% with an electric water-chilling attachment. This moisture is automatically removed and discharged to the sewer.—M. & E. Mfg. Co., Indianapolis, Ind.

Cools and dehydrates compressed air.

Automatic Spray Machine (DC8)—A light-duty rotary spray-finishing machine with a production range of 400 to 3000 articles per hour. The machine is designed to meet the need for fast, semi-automatic finishing equipment for articles and parts such as automobile horns, lipstick cases, radio bulbs, lamp shades, can lids, metal hardware, file handles, camera cases, paper cups, glassware, round metal ware, electrical parts, balls, footwear, speedometer cases, toys, etc.



The machine has a turntable that carries 15 rotating spindles to hold small parts.

Installation of proper workholders permits finishing of a variety of different parts on the same machine. Speed reduction unit is standard to permit variable-speed operation. If desired, a cam may be provided so that only every second spindle is sprayed.

Length of spraying period per cam is adjustable to the point of maximum efficiency and economy. Automatic spray gun and air control valve control the operation rigidly to the proper adjustment.

A ¼-hp. motor with synchronous speed of 1800-r.p.m. powers the unit. Turntable is 34¼-in. in diameter, and carries 15 spindles, each of which rotates on ball-bearings. All pulleys, belts, sprockets, etc., are fully guarded for operator's protection.

The machine is equipped with turntable, spindles, automatic spray gun and control valve, air transformer, material tank, exhaust fan, hose and hose connections.—The DeVilbiss Co., Toledo, Ohio.

Shelf-Type Water-Wash Booth—Same general design and construction as floor-type water-wash booths, but has a shelf 30-in. from floor, and is supported by angle-iron legs. Provides a continuous curtain of water which effectively washes down the overspray that ordinarily accumulates on the air distributing plates, and prevents solids from accumulat-

There seems to be no limit to kinds of business that are turning to wood grain finishes. During the year two concerns were sold in Australia, one manufacturing electric heaters and the other metal office furniture. Three metal bed manufacturers in Canada purchased new patterns. Improved appearance through the medium of graining plates has been sold to a concern making smoking stands, another making musical instruments, another making beverage coolers, another making metal caskets—and so it goes with every week adding some new line of business. Manufacturers of products that need something other than solid colors, are finding beautiful decorative effects in wood graining.

Water washed and has a shelf 30-in. high.

ing on rear wall of the booth, ventilating fan and exhaust piping. Supplied with or without a circulating pump, but for economic reasons the centrifugal circulation water pump is recommended, especially where a plant operates with metered water.

A continuous flow of water is sent to the supply tank where it flows over the air-distributing plates, washing all overspray into the settling tank at the bottom of the booth. The outlet to the circulating pump is provided with a removable fine-mesh cylindrical strainer to prevent solids from passing to the pump. Can be supplied with water-wash curtains on both sides as well as at rear of booth. Drain pans return the water to settling tank where it is screened and re-circulated, or drained into the sewer if no circulating pump is used.—Paasche Airbrush Co., Chicago, Ill.

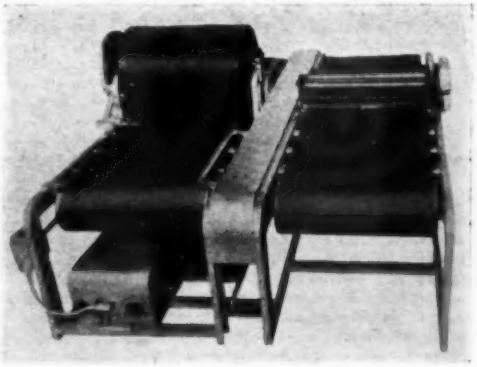
Portable Spray Unit—Streamlined design with forced-draft cooling. The entire compressor unit is enclosed in a heavy metal case, hence the danger of accidents to workmen or the public is eliminated. The unit itself is safeguarded from damage and its useful life is prolonged

Safe, light, cool, efficient; Wt., 40-lbs.

A development that is now coming to the front rapidly, is a device for eliminating most of the moisture drawn in with the air by the compressor, and condensed in the air lines from the air receiver.

The ordinary oil-and-water separator, equipped with a pressure regulator, does a splendid job of removing this moisture under ordinary conditions, but frequently during the year, when there is excessive humidity, the water question becomes serious and a costly drag on prodction.

The Aero-Dehydrator actually eliminates from 90% to 95% of this moisture before it reaches the oil-and-water separator, which further removes that portion that is carried along, so that the air finally reaching the gun is practically free of oil and moisture.



Graining plate is inked at right, ink is transferred to roller at left, then from roller to panel to be grained and finished.

by this protecting cover; powered with a G. E. universal motor; handle on top of unit permits easy handling.

Two powerful fans set up a tremendous suction and blowing system within the confines of the enclosed metal case. The scientific placement of intake and exhaust vents permits the entrance of a cooling air and does not allow this air to escape until it has passed completely around all parts of the unit.—Binks Mfg. Co., Chicago, Ill.

Leakproof Air Gun — The Air-O-Chek valve mechanism is totally enclosed. Unique patented design eliminates levers and buttons; also troublesome packing glands. Slight flexing of hose opens valve. It automatically closes when released—can't be left open to waste air. Specially designed nozzle gives powerful air stream for blowing dust, dirt and other foreign matter. Unscrewing valve head frees all working parts. Made to precision standards of bar brass and stainless steel. No rusting or corrosion.—Air-Way Pump & Equipment Co., Chicago, Ill.

GKS Wood Graining Machine—A continuous process for transferring the grain of one wood onto another less expensive piece of wood . . . The graining plate travels under the inking mechanism on the right and is then transferred onto the left hand conveyor belt passing under the large roller which picks up the impression. The wood to be grained then follows under the large roller and takes the impression.

Automatic timing devices make it possible to grain approximately 300 full-size pieces per hour; by grouping several smaller ones, over 1000 pieces can be grained efficiently in the same time. One or several of these machines will fit into any production schedule and, with the excellent grain that is reproduced, it is now possible to use this process on better grade furniture. — Geo. Koch Sons, Inc., Evansville, Ind.

A continued demand exists for production flocking units for use in flocking interiors of automobile trunks—cases, novelty effects, also by airplanes, and for use in sound deadening—as well as for applying flock to parts that become cold, which parts the public must handle. The development of flocking equipment has been rapid, so that high speed flocking units are now available for any production, and all excess flock is readily and easily reclaimed for re-use.

Degreaser with Solvent Still and Filter—This machine requires cleaning only about once every 2½ months, in spite of taking care of the cleaning of a very high production. The solvent still and filter remove all oil and insoluble contamination so that the boiling chamber is always full of clean solvent.

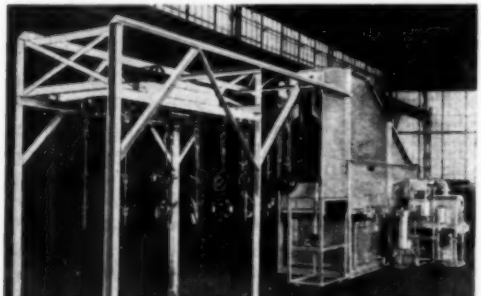
The cleaning cycle consists of immersing the work in boiling solvent and passing it out through solvent vapors. At the exit end of the degreaser, there is a light oil spray system that can be used to rustproof the work as is desirable when it is to be placed in storage for any length of time.

The return-type conveyor system is completely self-contained with the load and unload stations extending approximately 19-ft. from the machine. The work is lowered on special fixtures, which handle about a dozen wheel disc inserts each. Rolling and stamping oils and insoluble materials are removed from these parts in the degreaser; the operation being cleaning prior to casting of wheels around insert discs.

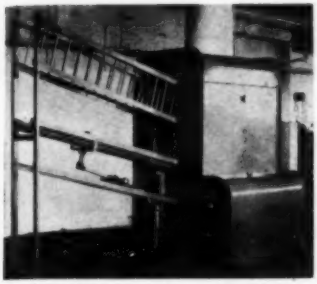
The solvent in the machine is heated by steam coil mounted in the removable clean-out door, and there is also a steam-jacketed bottom on the boiling compartment. This combination of steam coils and jacket gives the boiling solvents a vigorous rolling action which completely removes insolubles from the work. All steam connections are tested for a pressure of 40-lbs. per sq.in., and the steam-jacketed bottom is equipped with a pressure relief valve set at 15-lbs. per sq.in.

The solvent capacity of the boiling chamber is 188 gallons, and the clean solvent storage tank is of sufficient capacity to hold all solvent from the machine. The approximate weight, not including solvent still and filter, is 7,500-lbs. The rated production capacity of this machine is 10,000-lbs. of work per hour.—The Detroit Rex Products Co., Detroit, Mich.

Automatic Tire Sprayer—A machine developed especially for spray-painting automobile tires at the tire factory. Has a magazine feed that holds back incoming tires until the machine is ready to receive one; then it kicks in the first tire, permitting the others to advance one notch forward. Inside the compartment, five spray guns are mounted—one above and two on each side of the tire. For small tires, three guns will do the work, but for large tires all five guns are used. These spray guns are automatically controlled. They start spraying paint only when the tire is completely in position and begins rotating; then they cut off when the tire has made one complete revolution. Upon completion of one revolution, the automatic



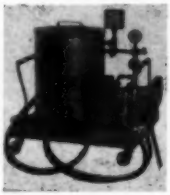
A self-contained high-production machine for automatically cleaning metal parts or products before finishing.



Spray-paints new tires automatically.

mechanism kicks out the finished tire, and lets in a new unfinished tire. The machine is adjustable to suit a wide range of sizes.—Plummer Spray Equipment Co., Napoleon, O.

M & E Hot Lacquer Unit — For heating, regulating and circulating hot lacquer. In series with the heating element is a sensitive high grade thermostatic valve, adjustable by the operator to maintain any temperature needed ranging from 100° to 200°F. This maintains the heat automatically. For close regulation, an accurate angle needle bypass valve is incorporated, adjustable by the operator to meet his requirements.



An off-and-on switch is provided for operating the pump independently of the heater unit.

The pump is directly connected to an explosion-proof motor approved by the Board of Underwriters, and all wiring is in vapor-tight conduit.

The heating element is equipped with a switch providing three heats. High heat provides for quickly heating the water in which the coil is placed. Medium heat can then be used for continuous production, and low heat for intermittent production. Normal consumption under full production is about 800 watts per hour.

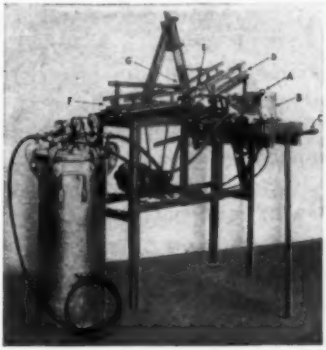
The coil is made of special material to prevent chemical reaction when in contact with hot lacquer solvents. At the same time it has a quick heat transfer quality.

The main container has an inner and outer wall enclosing a dead air space to confine the heat and prevent undue heat radiation and loss.

The pump is specially constructed for hot lacquer use. Clearances are adjusted to operate on the highest efficiency during the entire cycle of pumping lacquer from room temperature up to the maximum of 190°F.

The machine is rigidly mounted on a steel base provided with suitable handles. It is complete, everything being provided with the exception of a spray gun and pressure material container. These are usually part of the equipment of any finishing room and are readily adaptable for use with this hot lacquer unit.—M. & E. Mfg. Co., Indianapolis, Ind.

"Inside" Spray Machine — A machine for semi-automatically spray coating the insides of small cylindrical objects such as paper or metal cans. Cans feed by gravity down an adjustable slide and are released by a manually operated lever onto a



Sprays insides of cans automatically.

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allows greater outpu wi

DO *YOU* know about Du Pont Short-Bake DULUX? It's a finish whose amazing baking speed can save you time and money.

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actory lts with only one of the al priming coat or en orth x enamels are used. , brilli -white enamel (also olors). n be applied direct aned st bonderited steel or surface has excellent flexi- on, glo d hardness . . . ideal for almost any metal object where constant outdoor exposure is not necessary.

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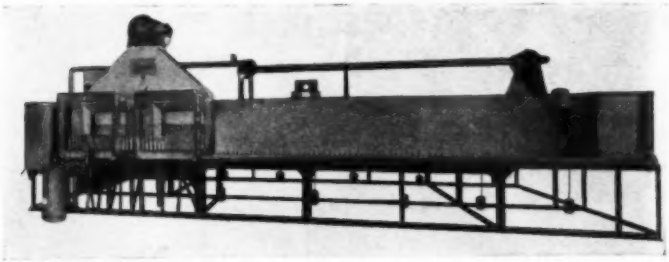
H S FOR EVERY PURPOSE AND EVERY SURFACE



Overall dimensions, 35-ft. long, 11-ft. wide; approximately 336-ft. of steel roller chain mounted on ball-bearing sprockets and equipped with ball-bearing chain take-up.

rotating device. A solenoid-operated spray gun, fitted with an extension nozzle, is then moved forward to coat the inside while the cylinder is being rotated. The gun is pulled back and the next cylinder comes down, pushing the finished one on its way. A 1/6-hp. electric motor operates the automatic part of the equipment. An average production of 10,000 items per 8-hour day can easily be maintined with this machine.—Eclipse Air Brush Co. Inc., Newark, N. J.

Automatic Finishing and Drying Unit—Designed for enameling flashlight cases and other similar items up to 18-in. in length, and baking the finish at temperatures ranging from 200° to 400°F. The conveyor is equipped with 1605 revolving spindle assemblies mounted at 2½-in. centers. Speed of conveyor is controlled to conform to any drying cycle required.

The drying oven is built in two sections to provide 200°F. temperature in the first section and 400°F. in the second section, with five minutes allowed for forced cooling after the pieces leave the oven. On a drying cycle of five minutes in the 200°F. section, 15 minutes in the 400°F. section and five minutes force cooling, the speed of the conveyor is regulated to produce 52½ finished pieces per minute. The oven unit is insulated with 3-in. rock wool and is electrically heated and thermostatically controlled. Removable tops are provided for easy access to the interior of the oven and 75% of the bottom area of the oven is equipped with counter-weighted doors to insure against explosion hazards.

The coating section is equipped with two spray booths, one for automatic operation and the other for manual or experimental purposes. This feature increases the value and utility of the unit, as it serves the dual purpose of a complete production unit plus the added feature of adapting it for experimental and new development work.—Paasche Airbrush Co., Chicago, Ill.

Decorative Sprayer—Designed for industrial decorative work; supplies a range of service from the drawing of a fine pencil line to the laying of a broad soft spray; bridges the gap between a large artist's air brush and the small production or touch-up spray gun. Especially suited to delicate tinting, fine stenciling, shad-

Manufacturers of bed and dining room sets, using inexpensive woods with little or no grain, have been turning to graining to dress up their beds, bureaus, dressers, dinettes and tables, with the result that they have made them so attractive, production is having a hard time keeping up with sales.

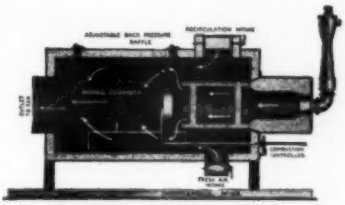
ing, blending and highlighting; an excellent tool for those engaged in fine decorative finishing, either in new or refinished products. It is ideal for fine touch-up work on automobiles, furniture and appliances, and its low air consumption adapts it well to the service depart-

Type AG gun for decorative spraying.

ments of distributors and dealers where only a small or limited volume of compressed air is at hand.

Available in a choice of three nozzle combinations, which are adjustable for either round or fan spray applications. The gun offers a maximum spray width of 3-in. Control of both width and density of spray is accurate and simple.—The DeVilbiss Co., Toledo, Ohio.

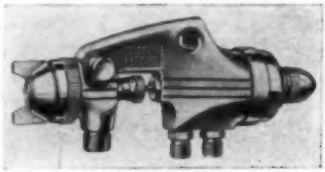
Direct Gas-Fired Heaters for Baking Ovens—This new equipment assures great operating efficiency and flexibility under all kinds of heater applications. Supplies the need for an adjustable controlled combustion feature on externally-mounted direct-fired air heaters. The distance between the end of the combustion chamber and the baffle can be increased or decreased to meet each operating condition. In other words, back pressure set up in the combus-



Eliminates stink and fouling.

tion chamber may be positively regulated, thereby maintaining correct combustion temperature, proper induced drafts, and maximum combustion efficiency under each operating requirement. This improved combustion eliminates the objectionable odor from unburned gases, prevents fouled finishes such as defective or "fisheye" wrinkles, avoids any killing of gloss, improves working conditions for operators, and lowers fuel costs.—The Despatch Oven Co., Minneapolis, Minn.

Automatic Spray Gun—A streamlined automatic spray gun, known as Thor Model No. 21, which is a radical improvement over the Thor Model No. 10 automatic gun. Offered in connection with an improved 3-way valve for cam, hand or foot operation of the air plunger, which automatically operates the trigger of



For use in automatic spraying.

the gun . . . . new perfections in timing and spraying efficiency. Dripping and spitting have been eliminated. Positive action of air plunger gives spraying results equal to hand-operated guns. Is available in setups for all modern finishing materials, including ceramic or vitreous materials.—Binks Mfg. Co., Chicago, Ill.

The application by the airbrush of graining effects has been an important new stride forward. Such effects as marbelizing, onyx and a wider variety of effects of a similar nature may be readily and easily achieved now with the airbrush—on a production basis. This work was heretofore done, in many instances, by rollers or by decalcomania, but the new process is better and faster than any competitive method, particularly so on uneven and odd-shaped surfaces.

Automatic Spraying Machine (Rotary DC4)—A machine with rotating spindles which is adaptable to a great many uses. The spindles are part of a long endless chain (which travels from right to left in the accompanying illustration) giving ample space for different operations. This machine was designed to spray a porcelain glaze on china ware. The chamber on the right dusts off the spindles, the objects are loaded on the work holders, then pass through a pre-heating oven and finally are sprayed. Production, about 7200 per hour.—The DeVilbiss Co., Toledo, Ohio.

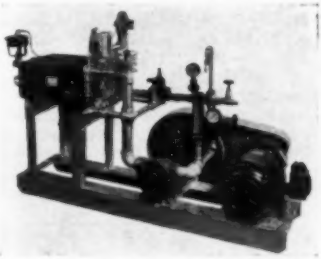
Gyro Electric Sander—Has a sanding motion entirely different from other mechanical or hand sanding action. Its movement is best described as "elipto-circular" or "multi-direction." The movement of the sanding pad is but 3/16-in. and is very rapid—4000 motions per minute; leaves no scratches when abrasives of the proper grit are used; may be operated cross-grain to the wood without scratching; has a tendency to polish as it sands when fine abrasives are used. Useful for "feather-

Perfectly balanced; weighs only 3½-lbs.

Chain travels from right to left. Spindles are cleaned in chamber at right; work passes through pre-heating oven before being sprayed; production, 7200 per hour.

ing" spot jobs, removing paint, varnish, lacquer or rust, sanding bare surfaces, scuff sanding, sanding between coats, rubbing and polishing. The sanding pad assembly is of high quality resilient rubber, molded in one piece, enabling the sanding of curved as well as flat surfaces. A special gear-driven 4000-r.p.m. electric motor is connected to the sander head. All rotating parts are mounted in ball bearings.—Sterling Products Co., Detroit, Mich.

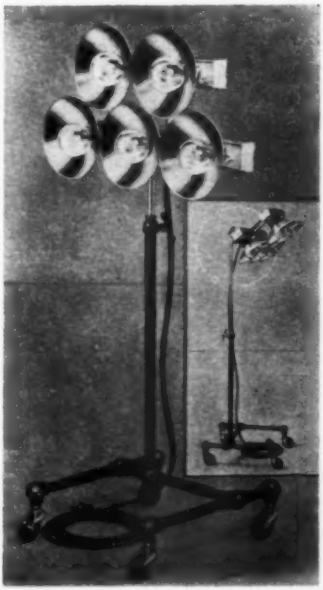
Steamheated Lacquer Pumping Unit—Designed to heat lacquer with a viscosity exceeding 200 seconds (No. 4 Ford cup) and circulate it past the fluid inlet of the spray gun



A unit for the heating and circulation of viscous materials . . . . to be sprayed.

at the rate of one gallon per minute. This means that it can be used in production and that more than one gun can be used with one unit. Lacquer with a normal viscosity of 6000 centipoises (which is too viscous to be classified in the customary manner) has been successfully made sprayable with this type of heater. —The DeVilbiss Co., Toledo, Ohio.

Naico Portable Units for Infra-Red Ray Drying—A redesigned portable spot-drying unit for infra-red ray drying, heating and dehydrating. This unit is also suitable for experimental work, as well as spot drying, for testing the comparative efficiency of the infra-red ray process prior to a major installation. The unit is

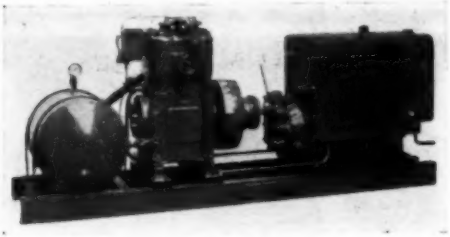


Adjustable and portable for spot drying.

adjustable to various heights and angles, which adds to its flexibility.

The cluster method of mounting reflectors is used on these units because it has been found to be the most efficient arrangement. A 5-light unit is illustrated and other units with more lamps to dry greater areas are available.—North American Electric Lamp Co., St. Louis, Mo.

The power machine that we brought out for graining flat pieces the latter part of 1938 came through with flying colors in 1939. Not a single concern sold has experienced any mechanical difficulty. This machine will grain a surface up to 31x80-in., so that three dresser drawer fronts can be run at a time and grain 180 per hour.



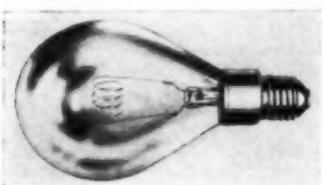
An air compressor outfit driven by a 6-hp. gasoline engine. Both units are cooled by the same circulating water.

Gas Engine, Compressor Unit—A large water-cooled compressor . . . . uses the same water for cooling the water-cooled gasoline engine that drives compressor. The accompanying illustration shows the water pipes running to and from engine and compressor.

The compressor is a twin-cylinder type having a displacement of 55-c.f.m. The gas engine develops 6-hp. Engine, compressor and air tank are mounted on skids. The whole unit in turn, can be mounted on a flat truck for carrying it from one spray painting job to another. The compressor will handle from three to four heavy-duty spray guns for cut-back asphalt, sound deadner, and other heavy material. — Binks Mfg. Co., Chicago, Ill.

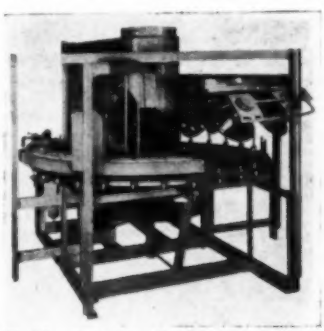
Dritherm Lamps—Developed especially for use in infra-red ray (radiant energy) drying, heating and dehydrating. They are accurately made to the rigid specifications that are demanded in the infra-red ray drying process. These include: exacting placement of the filament with relation to reflector units, uniformity of filament materials, resistance of materials to heat, and uniformity of the glass for maximum efficiency of the rays.

Nalco Lamps are ruggedly constructed and produce a long burning life.—North American Electric Lamp Co., St. Louis, Mo.



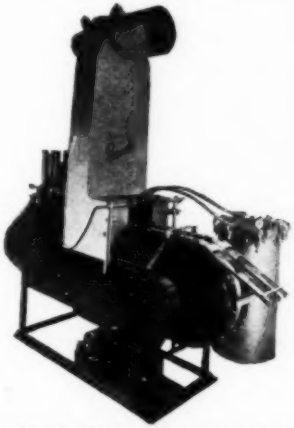
Designed for infra-red ray drying.

Automatic Spraying Machine (Rotary DC2)—A medium size machine also incorporating a revolving table and rotating spindles. (See description of Rotary DC1, elsewhere in this Review.) This particular machine uses infra-red ray drying lamps for rapidly drying the sprayed work. It, too, has the merits of high production, compactness, and adjustable guns. Operating capacity varies from 750 to 1000 articles per hour.—The DeVilbiss Co., Toledo, O.



Machine to automatically spray articles and dry them with infra-red ray lamps.

Automatic Coating Machine for Can Tops—It automatically loads, coats and unloads 300 can tops per minute; is equipped with two auto-



Loads and coats 300 can tops per minute.

matic airbrushes, automatic off-and-on control, material tank, ventilating booth and ¼-hp. exhaust unit. The conveyor is 2-in. wide and 6½-ft. long. Dual chain and cross bars support 112 rotating ball-bearing spindle assemblies with holding fixtures for can tops.

The can tops are automatically fed to the conveyor by a specially designed automatic feeder. Can tops pass the coating station on an endless conveyor and are discharged on another conveyor which carries them to the assembly point, by which time they are dry and ready for use.—Paasche Airbrush Co., Chicago, Ill.

GKS Cabinet Ovens—Large cabinet ovens manufactured on a production basis have been introduced during the past several months . . . . making it possible for small manufacturers to produce baked finishes on their products. The illustrated oven is manufactured complete with recirculating system, automatic con-

Modern, convenient, safe, economical.

trols, and other equipment used on larger ovens. Is thermostatically controlled; equipped with signal light and explosion-proof spring catch for the door. Capable of operating at any temperature between 100° and 450°F.—Geo. Koch Sons, Inc., Evansville, Ind.

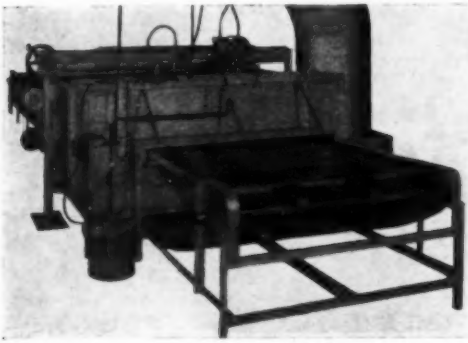
Light Spray Gun—A new streamlined spray gun for lighter work—to fill a definite need in the products finishing field. Utility features in-

Streamlined design; improved utility.

clude: Better atomization and better control, interchangeable nozzles, less pressure drop, and less air consumption. Control for the amount of material is conveniently placed at back of the gun, while control of the width of spray is by a knurled screw just back of the modern one-piece head.—Binks Mfg. Co., Chicago, Ill.

There is an ever increasing use of water-wash spray booths, including ventilating equipment, to satisfactorily handle the vapors and residues of the many newly developed finishing materials. These water-wash booths are also supplied with a reclaiming chamber for reclaiming excess materials. Many are supplied with circulating pump systems; others are arranged for use with city water pressure systems.

Automatic Spraying Machine (DC5)—Has a power-feed mechanism and cross-travel spray guns for spraying flat panels, sheet stock, etc., that can be sent through in level position. This machine can be made in different sizes to meet a variety of conditions. It is capable of large production.—The DeVilbiss Co., Toledo, Ohio.



Left: A machine for automatically spray-coating flat sheet stock.

Measures Viscosity—The Ganson Flow Meter is designed to eliminate guess work in the mixing and use of finishing materials. It provides an

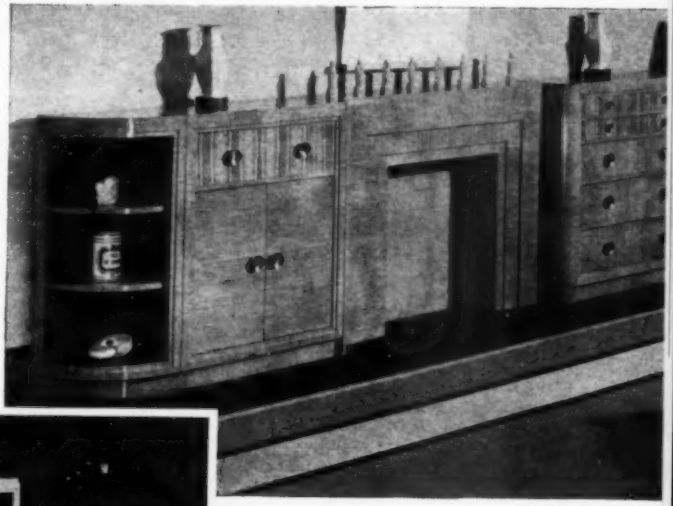
Measures viscosity of finishing materials.

easy, accurate and dependable means of measuring the viscosity of materials by clocking and flow from the valve in a standard size cup mounted conveniently for instant use. The pedestal that holds the cup upright and level also supports an accurate and convenient clocking meter which includes a graduated scale and a press bottom for instantly stopping the clock when the continuous flow of material from the cup ceases.—The Ganson Company, Chicago, Ill.

This New Furniture Exhibited at the American Furniture Mart

IS DECORATED WITH *Di-Noc* PATENTED ALL-LACQUER FINISH

The English Harewood, Snakeskin and Cracked China reproductions are reproduced on birch surfaces on the mantel and sectional cases.



Snakeskin reproduced on bent ash-wood is the decoration on the Zebra covered chair.

The English Harewood, Snakeskin and Cracked China reproductions are engraved on a Di-Noc patented film of pure lacquer and applied so that they become an integral part of the surface of the wood.

Di-Noc All-Lacquer Decorated Films can be used on many surfaces: wood, metal, masonite, etc. Practically any wood grain, marble or any other decorative effect can be reproduced. It can be applied to metal in sheets and the articles can then be stamped from the metal without a break in the lacquer film.

Write today for information about this patented Di-Noc All-Lacquer Finish.

THE DI-NOC MANUFACTURING CO.

1700 LONDON ROAD **CLEVELAND, OHIO**

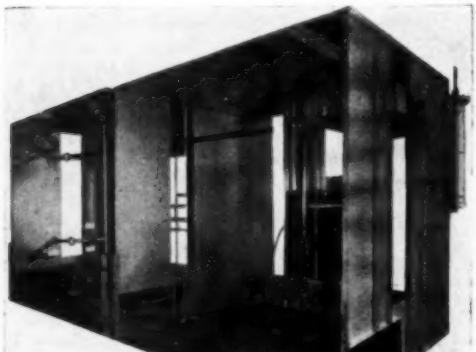
Among the many new things coming from finishing rooms during 1939, as noted by the writer, the most remarkable is the application of attractive hardwood grain by way of the printing method on wood products. Most of those who are familiar with this process of reproduction, associate it with the finishing of metal only. However, this method is no longer exclusive on metal. During the past year it was extensively adopted by manufacturers of wood bedroom and dining room suites. The printed grained furniture, as seen, is nicely done and has excellent prospects of prospering.—J. K. S.

Automatically coats metal tile squares.

Automatic Air-Painting Unit—Has an air-operated oscillating arm with a 32-in. stroke; developed for coating metal tile squares automatically. A steady, continuous production of 1875 metal tile squares every hour is obtained from this unit, according to the manufacturer. The two automatic airguns automatically oscillate back and forth and apply the exact amount of material needed for coating the product.

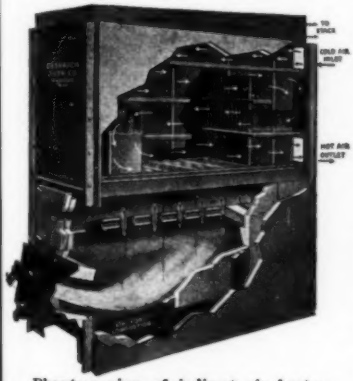
The unit is 21-ft. long, 3-ft. wide and 2½-ft. high. Speed of the conveyor can be varied from 2½ to 5-ft. per minute. The complete unit includes ventilating duct, fireproof ventilating unit, pressure-feed material tank, and enclosed coating station.—Paasche Airbrush Co., Chicago, Ill.

Automatic Spraying Machine (DC6)—Two interesting features are visible in the accompanying view of this machine, with its multiple spray guns that travel vertically. One is the electric eye device (operating through periscopes) which actuates the guns only when loaded racks pass through the spray booth. The other is the compound angles of the guns which allow complete coatings of curved pieces with rolled edges.—The DeVilbiss Company, Toledo, Ohio.



Left: Spray booths through which a conveyor carries products to be spray coated automatically.

Indirect Air Heater (Gas or Oil-Fired)—For economically supplying clean heated air to ovens used for bake finishing. According to the manufacturer it has been in course of development over a period of seven years. Features of the air heater are: 1) no combustion gases, carbon or dirt get into the air to affect finishes being processed; 2) explosion hazards are eliminated; 3) the air filtering problem is greatly reduced. As a result, rejects and refinishing are cut to a minimum.

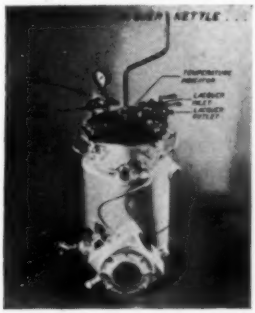


Phantom view of indirect air heater.

Vertical "self cleaning" tubes are used. These tubes are streamlined to obtain maximum air contact and to effect a natural travel for the hot gases through the heat exchanger. This permits the heaters to give maximum efficiency continuously, without the need for using a greater amount of fuel to keep ovens or dryers up to the operating temperature. Vertical tubes eliminate weekly or daily cleaning of heat exchanger tubes and effect savings of hundreds of dollars annually.—The Despatch Oven Co., Minneapolis, Minn.

Hot-Spray Lacquer Kettle — This hot-spray lacquer kettle is similar in principle to the ordinary kitchen "double-boiler." A conventional pressure kettle, capable of withstanding 50-lbs. of pressure per inch, is surrounded by water heated by means of an electric heater enclosed near the base.

A thermostat automatically controls the lacquer temperature to any



Electrically heated and water jacketed.

pre-determined point between 100° and 200°F. Its vapor-proof electric heating unit carries the seal of the Underwriters' Laboratories. This unit provides a continuous flow of hot lacquer at the rate of one gallon per eight minutes. Its 8-gallon capacity is ordinary sufficient for a half-day's operation.

The P&S hot-spray lacquer kettle is supplied with the necessary electrical and hose connections, pressure regulator, and circulating pump.—Pierce & Stevens, Inc., Buffalo, N. Y.

An outstanding development in design of spray equipment for 1939 was the introduction of a streamlined, totally-enclosed portable painting outfit . . . . a radical departure from anything offered to the spray equipment world before. This streamlining and modern designing is not only attractive in appearance, but is a functional improvement in that the streamlined covprovement in the unit.

Automatic Spraying Machine (Rotary DC1)—Has a revolving table with rotating spindles and is designed to spray paint on small lightweight articles, spraying a fast-drying material. Incorporates the

Automatic; high production; small size.

principle of having spindles pass a loading station, rotate through the spray booth and then pass through the drying and unloading stations. Automatic spray guns are mounted on adjustable brackets so the guns can be operated at any angle. Operating capacity varies from 400 to 3000 items per hour.—The DeVilbiss Co., Toledo, Ohio.

Photographic Wood-Grain Silk Screen Plates—May be used to print practically any wood grain. Screen plates can be made to print solid grain and, if desirable, include inlays, marquetry, route lines, 2-way and 4-way matches and practically any effect desired.

All screens are printed in one color. When the correct ground color is used, together with the proper ink in the degree of translucency necessary, practically any wood grain may be successfully and attractively printed in quantity. They are suitable for printing only on flat surfaces or surfaces that are flat at time of printing, such as wood, metal, wallboard, etc.

These screens have long life and have the additional merit of being almost impossible to clog so long as the proper ink is used. A special ink has been developed which does not blur, so that the finest detail of an original wood grain is reproduced successfully. These screens are already in successful production work, printing many different types of furniture such as beds, dressers, vanities, juvenile furniture, radio cabinets, glass tops, table tops, etc.—Naz-Dar Co., Chicago, Ill.

Crown No. 20 Spray Gun—Spray head parts are self-aligning and interchangeable; air nozzle is a brass pressure casting with maximum pro-

With suction-feed container assembly.

tection for fan jets. The fluid nozzle is of steel, heat treated and precision ground, with 2-point bearing. Instantaneous adjustment from round to all widths of fan spray. Main line air adjustment in combination with spray width control on the gun.

The fluid needle is made of stainless steel and the whole assembly is quickly removable for cleaning, as one piece. Precision work provides positive seating and shut-off of material flow.

BERRY Brother's service to the heating industry has seen an uninterrupted succession of outstanding finishes—Raven Line Japans, colored enamels, Ruf-Kast, Hi-Heat Enamels in black and white—and now a sensational new *two-color-in-one-application* finish that production men (and sales managers) are both enthusiastic about. Write for report on 1000-hour, full-capacity heat test. You'll find it interesting. 50 years of specialized heating industry experience has given Berry Brothers chemists a perfect understanding of finishing material needs. Put your finishing problems up to Berry Brothers. Let us send you samples.

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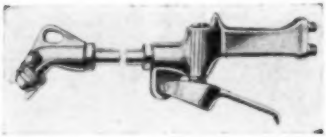
Industrial Varnishes • Enamels • Lacquers
DETROIT, MICHIGAN WALKERVILLE, ONTARIO

Kindly mention INDUSTRIAL FINISHING when writing advertisers

Body is made of unbreakable drop-forged aluminum; has strength of steel with the lightness of aluminum. Special nickel, electrolytic finish.—Crown Spray Gun Mfg. Co., Los Angeles, Calif.

Extension Spray Gun—A complete one-piece streamlined extension spray gun, known as the "Thor Model No. 23 Spray Gun." Designed primarily to allow the operator to

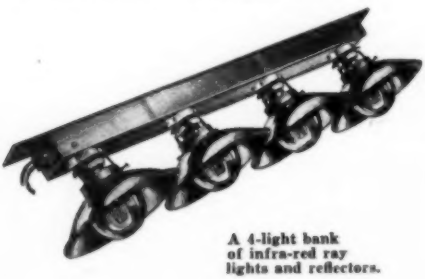


Made in 3, 4, 5, 6 and 7-ft. lengths.

apply paint directly to surfaces that are usually out of reach of an ordinary spray gun—for applying paint on interior walls, ceilings, truss work, girders and similar applications. Made of special alloy metal . . . . exceptionally light in weight and easy to handle. All parts are carefully encased to prevent damage in handling. A conveniently-placed knurled screw, directly behind the nozzle head, controls the width of the spray.—Binks Mfg. Co., Chicago.

Units for Infra-Red Ray Drying—In order to simplify the installation of test or permanent Infra-Red Ray drying units, North American Electric Lamp Co., St. Louis, Mo., are now offering standard units of light banks. These units are available completely assembled with from three to eight lights per unit. They are furnished complete with lights, reflectors and porcelain sockets mounted on rigid conduit and are equipped with 12½-ft. of approved rubber cord and plug, ready for immediate use. Individual lights and reflectors are also available for those desiring to mount and assemble their own light banks.

Pneumix Air-Motored Agitators—The direct drive type (AL and BL). A laterally-swinging crossarm holding the air motor with a direct drive shaft and propeller, is adjustable up and down a vertical bar and thus can be fixed at any height. The ease of lowering the agitating unit into a tank and raising it when the operation is completed is one of the out-



A 4-light bank of infra-red ray lights and reflectors.

Small and large mixers.

A new kind of finish

WAX-O-NAMEL

for wood and metal

BY THE MAKERS OF JOHNSON'S WAX!

an enamel that dries with a WAX finish!

"Wax-O-Namel contains Wax. It gives a more beautiful, longer-lasting surface—adds eye-appeal—and, because of its mar-proof quality, definitely reduces 'rejects' in manufacturing."

Smoother Surface—Due to the wax content, Johnson's Wax-O-Namel provides a smoother and more mar-resisting finish, a deeper lustre.

Adaptability—Adaptable to any products in air-dry or bake formulation.

Greater Durability—Rigid tests prove Wax-O-Namel harder to chip, scratch or mar.

The Johnson Industrial Division Specializes in the Manufacture of:

Synthetics
Varnishes
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Enamels

—to meet your specific requirements. Write us about your difficult finishing problems. We will welcome the opportunity to work with you in developing finishes at lowest cost per unit.

Mail Coupon Below *for Further Information*

Please send me without cost or obligation, complete information about the revolutionary new enamel—Johnson's Wax-O-Namel.

S. C. JOHNSON & SON, INC.
Industrial Division
Racine, Wisconsin

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*Address*_____

*City*_____ *State*_____

Another trend that we have noticed is toward the automatic spray booth, along with a continuous conveyor passing through same, handling a great number of different articles that can be sprayed without changing the position of the article, yet receiving its desired coating.

Automatic dipping of articles has been improved somewhat by our company by dipping four different colored finishes on the same article in four separate auxiliary tanks and automatically transferring these articles to the main monorail conveyor which passes through one bake oven.—Drying Systems, Inc.

standing features of the new mounting.

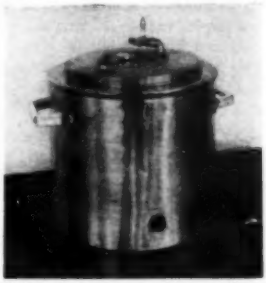
Two models in the new series of mountings are the "AL" model designed for laboratory work, and the larger "BL" unit which is 5-ft. in height. This is a stationary unit designed for production work.

The shafts and propellers are standard in chromium plated or stainless steel. In all Pneumix models, variable speeds ranging from 30 to 6000-r.p.m. are obtainable. Quiet operation and elimination of fire and explosion hazards are assured.—Eclipse Air Brush Co., Inc., Newark, N. J.

Fluid Regulator—Used extensively with circulating paint systems and dead-end tank line systems to maintain regulated pressures on materials delivered to spray guns. Provides an accurate check on material consumption and enables operators to improve the quality of finish because of regulated fluid supply. Does not clog; is not affected by solvents; does not strain out pigments or dilute the fluid; always ready for operating without resetting. One fluid regulator should be installed for every two spray guns used on a line in production work.—Paasche Airbrush Co., Chicago, Ill.

Maintains regulater pressure on materials delivered to spray guns.

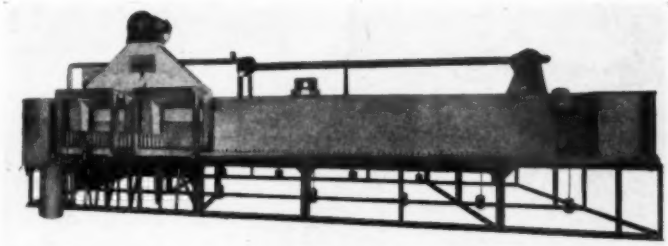
Lacquer Heater—For heating lacquer to be sprayed at high temperatures. Made entirely of copper, on Thermos cooker principle, well insulated; automatic heat control maintains a uniform temperature. The copper tubing for lacquer is tinned on the inside to prevent any possibility of lacquer discoloration. Heating unit is completely enclosed and imbedded in cement—a construction used by the manufacturer for 22 years. Can be furnished for DC or AC electric service of any voltage.—Liberty Electric Co., Indianapolis, Ind.



Offers low current consumption.

FORWARD—

To Greater Production and New Economies!



Paasche Automatic Aircoating and Drying Unit in large Eastern plant. Size 35 ft. long by 11 ft. wide. Just one of hundreds installed to meet customers' particular requirements.

Another Paasche Success

YOU PRODUCTION MEN—Here's another Paasche Automatic Airfinishing Unit that makes a hard job easy—possible only by that rare combination of skill, experience and confidence.

Automatic Airfinishing means more profits for you. Put yourself in a position to compete and make more money. Modernize your plant with Paasche Automatic or Manual Airpainting Units. Throw off old time finishing methods for new.

You will enjoy an increased volume of production—benefit from lowered costs—and turn out more attractive products that enhance your reputation for quality.

Let our engineers show you how Paasche automatic airfinishing enables you to set the pace in your industry.

Profit with Paasche

Paasche Airbrush Co. 1917 Diversey Parkway Chicago

Manufacturers Most Complete Airfinishing Line

IN CANADA—A. R. WILLIAMS MACHINERY CO., LTD., TORONTO
OMER DeSERRES, LTD., MONTREAL

Dear Ed: In reply to your request for some personal comments pertaining to new or improved equipment for finishing rooms, developing during 1939, perhaps the chief new development in our business is the spraying of lacquer at elevated temperatures, commonly termed "Hot Lacquer." Being one of the pioneers who have followed this development from its inception, we have been deeply impressed by the claims made for this finish by those who are actually in production with it. Of course, there have been failures, due in some cases, to improper formulation of the material, and in others to imperfect performance of the apparatus used for heating the material. Most of the "bugs" have now been eliminated . . . . this new process offers some rather striking results—a beautiful and enduring finish.

Baked Enamel Stripper (Lea Synstrip)—Quickly removes air-dried and high-bake synthetic enamel coatings from metal parts or products without damaging the metal surfaces in the slightest degree. This new development in stripping makes use of a stripping solution that can be obtained in concentrated form and used either at this concentration or in any degree of dilution with water that is most satisfactory for the particular job. The recommended dilutions are from full strength to approximately seven parts of water to one part of the stripping solution. The solution is most commonly used in a steel tank in which there are steam coils to heat the solution.

The temperature may range from 160° to 200°F., depending upon the job of stripping to be done. The work is immersed in the hot solution for a period of from ½ minute to approximately 10 minutes. Most types of work are completely stripped in less than four minutes.

The hot stripping solution does not dissolve the enamel coating but swells it in such a way that it becomes loosened from the base metal. It breaks away in sheets or large flakes which, in most cases, fall to the bottom of the tank or float around in the solution. Occasionally the solution will have to be cleaned to prevent the steam coils from being made less effective by accumulations of stripped enamel. This can be easily accomplished by placing a wire-mesh tray in the tank, so it rests just above the steam coils. This wire mesh tray will catch the stripped enamel, and can be lifted out from time to time and cleaned.

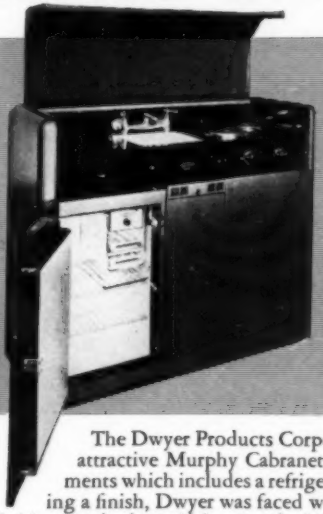
Extensive laboratory tests and actual factory production runs show that this material will remove practically any of the baked synthetic enamels and baked japans from practically any metallic base metal or alloy, smooth or rough, leaving the surfaces suitable for refinishing—after a rinse in hot water to remove the stripping solution. The most difficult job that has been solved with this method was the removal of lacquer from an anodized aluminum sheet without the destruction of the anodized surface.

Active ingredients in the bath are not consumed by reaction with enamel, paint or lacquer. However, some loss is incurred at higher temperatures, and additional make-up material and water must be added from time to time. This method produces excellent results quickly, with no fire hazard.—Lea Mfg. Co.

A bulletin by American Nickeloid Co., Peru, Ill., reveals information about and shows samples of bright nickel and chrome aluminum metal sheets. Copies can be obtained by writing the company.

HOW THIS UNUSUALLY DIFFICULT FINISHING PROBLEM WAS

SOLVED WITH *POLYMERIN



HEAT RESISTANT

COLD RESISTANT

WEAR RESISTANT

The Dwyer Products Corporation, Michigan City, Indiana, makes the attractive Murphy Cabranette, an ingenious unit for hotels and apartments which includes a refrigerator, an electric range, and a sink. In choosing a finish, Dwyer was faced with two important considerations. First, this finish must be beautiful; second, this finish must resist the heat of the electric stove, the cold and moisture of the refrigerator, and it must stand up under the continual hard use to which these units are customarily subjected.

POLYMERIN SOLVED THE PROBLEM. Its amazing qualities of durability, plus its attractive, easy-to-clean surface gave Dwyer the finish it required for this exceptionally difficult application.

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THE ORIGINAL SPEED-BAKE FINISH

Finishing *Shutter Awnings*

BY W. R. ALLEN
Los Angeles, California

WHEN YOU first see a shutter awning you may think the sloping section is a venetian blind.* It consists of a series of horizontal blades spaced equi-distantly apart, fastened together to move in unison, and adjustable through the same range as the slats in a venetian blind. The blades can be set in closed or flat position, with their edges lapped like weatherboards so they will exclude light from above or shed rain, or they can be opened part way to let air pass through for ventilation and still exclude overhead sunlight; or they can be set clear up on edge.

Some shutter awnings have wood blades; others have metal blades. These blades, both wood and metal, are given coats of finishing material for protection and decoration. Among the western woods used for shutter awning slats, two of those frequently employed are redwood and red cedar. Differences in these woods make it necessary to keep them

*The author says that "shutter awnings should not be compared with venetian blinds because the idea is entirely original, and awning manufacturers are careful to avoid comparison"; also what we would refer to as "slats" must be called "blades"—so we will compromise.—EDITOR.

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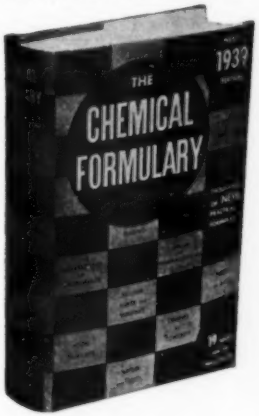

PARTIAL LIST OF CONTENTS

Rubber & Latex
Adhesives
Polishes
Lubricants
Drugs
Farm & Garden
Specialties
Resins
Synthetic Resins
Plating
Pyrotechnics
Solders
Welding
Insecticides
Pharmaceuticals
Oils & Fats
Liquors
Pluxes
Explosives
Paints
Lacquers
Varnishes
Leather
Skins
Furs
Removing Stains
Bleaches
Ceramics
Deodorants
Disinfectants
Laundry Specialties
Dental Products
Etching
Fireproofing
Animal Remedies
Boiler Compounds
Glass
Textiles
Fibres
Beverages
Flavors
Rustproofing
Metal Treatments
Food Products
Enamels
Cosmetics
Inks
Marking Compositions
Soaps
Cleaners
Waterproofing
Metals
Alloys
Pastes
Glues
Fireworks
Waxes
Mildew Proofing
Chemical Specialties
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separate and to finish them differently.

Redwood is easy to finish because it absorbs the finishing material readily, permitting satisfactory penetration and anchorage. Of course, the wood must be thoroughly seasoned before it is worked into slats and finished. Redwood normally has a high moisture content and this excess moisture must be removed before any coating is applied. The finished slats, being continually exposed outside, are subjected to a very severe weathering test.

Red cedar is a light-weight soft close-grained wood which doesn't absorb paint or finish coats readily. Care must be taken in the selection of this wood because so much of it has a high oil content. Cedar oil is a paint solvent and unless the wood has been properly seasoned and treated, the finish applied to it will not last long.

The finishing operations about to be described are based upon the writer's observations in a manufacturing plant in Glendale, Calif.

Redwood blades are given a slightly heavier mist coat and slightly heavier undercoats than red cedar, because of the natural tendency of redwood to absorb the finishing material. When the undercoats on the blades and other parts to be painted have become thoroughly dry they are wet-sanded with wet-or-dry abrasive paper, grit No. 360. This smooths the surfaces in preparation for the spraying of two smooth enamel coats.

All metal blades and parts are thoroughly inspected before they are subjected to the several processes necessary for the application of a thoroughly dependable finish. Any surfaces that require sanding are smoothed with production abrasive paper—usually grit No. 60D or No. 80D. They are given a thorough cleaning in a tank containing a commercial cleaning solution, after which they are spray rinsed in water at a temperature of 180°F. Then they are automatically conveyed to a tank of muriatic acid solution where they are etched. Etching is followed by rinsing in a spray rinse of hot water. From this point the metal parts are conveyed to the cadmium plating tanks where they are plated (to prevent rusting) and again rinsed in water at 180°F.

Same Finish for Both Wood and Metal Awnings

Both steel and wood parts are undercoated and finished with the same synthetic enamel system. Steel blades and other steel or iron parts to be finished are first spray coated with a light mist coat of the undercoat material, followed by a medium and a full wet coat. They are then automatically conveyed to the drying room where they are allowed to dry at a temperature of 90° to 100°F. for 12 hours before receiving the finish coats.

The finishing coats are applied to both wood and steel blades in the same manner, and the drying period, following two enamel coats, is the same for steel as for wood. Assembled awnings are hung on a conveyor that passes through the spray booths. Two coats of enamel are applied. After the two coats have been sprayed the awnings are automatically conveyed to a drying room where they remain until the enamel is

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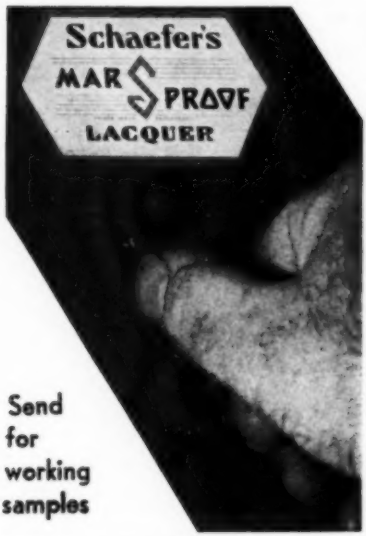

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thoroughly dry. When the enamel finish is dry the awnings are ready for delivery and installation.

A variety of enamel colors are used in finishing shutter awnings. Usually the awnings are painted in colors to match or harmonize with the window trim and doors — and with the general color scheme of the building on which they are installed.

Heating & Ventilating Show; Trend of Finishes

The trend in decorative and protective coatings, as viewed at the recent Heating & Ventilating Show in Cleveland: Smooth, gloss and semi-gloss; tough quick-bake type finishes continue their popularity, as shown on much of the equipment exhibited. Rough finishes were much in evidence—dull and shiny, coarse and smooth.

Probably the greatest thing of interest in finishes, as evidenced in the exhibits, was the smooth surface 2-tone hammered metal effect, and the still newer smooth gloss spatter. Both are 2-spray, one-bake finishes. Much interest was centered in these two types of finishes, and many were the expressions of manufacturers that they wanted to get back to something smooth but "different."

Lilly Varnish Co's. 75th Year

The Lilly Varnish Co., 666 S. California St., Indianapolis, Ind., marks 1940 as its 75th year of service to industrial paint, varnish and lacquer consumers. Coinciding with this important anniversary, the president of the company, Mr. W. I. Longsworth, was installed, on January 26, as president of the Indianapolis Chamber of Commerce which is celebrating its 50th anniversary. The Lilly Varnish Co. also has a plant at High Point, N. C., and branch offices in Chicago, Ill., Grand Rapids, Mich., and Gardner, Mass.

Bulletins and color cards on lacquers that glow in darkness can be obtained from the Continental Lithograph Corp., 952 East 72nd St., Cleveland, Ohio. The new materials have been improved.

Spraying Filler . . .

AN IMPROVEMENT IN FURNITURE FINISHING

BY H. W. CHESTER

Foreman of Furniture Finishing

Foreman of Furniture Finishing explains exactly what equipment is needed to successfully spray filler, how to mix and prepare the filler, what air pressures to use at the pressure tank and spray gun, precautions to take in spraying furniture on conveyor production line, and the details of follow-up padding-in, rubbing off and final wiping operations.

UNTIL RECENT years all wood fillers were applied by hand brushing, with an ordinary bristle brush, but today many progressive concerns are spraying their filler. They find that this method produces just as good a job of filling. In fact, in many cases the final result is better than what is accomplished by hand brushing. Also, the spray method naturally effects a considerable saving in labor. With the proper equipment one man can spray filler on as many units of furniture as four men can fill by brushing in the same length of time.

To properly spray filler, the following equipment is necessary:

1) A preliminary mixing tank equipped with hand-cranked agitator or stirring propellor.

2) An ordinary pressure tank (of which there are several on the market). This tank must be equipped with an air-motor driven agitator to keep the filler continuously stirred and properly mixed, which is very important in filling. (Personally, I regard electric-driven agitators as a fire hazard for this work.)

3) A regular production spray gun. On this spray gun (the manufacturer advertises every month in I. F.), I use an "E" air tip and an "E" needle; and I find that the No. 20 air cap works best for spraying filler. The manufacturer recommends an "FF" needle and air tip, and a No. 76 air cap for this work. I have tried these and several others, but still prefer those I am using, as they give the most satisfactory results.

Preparing the Filler
Mixing . . . . Straining

The filler should be prepared and mixed in the tank or container that has a hand-operated agitator. We use 5 to 6½-lbs. of

paste filler to each gallon of white gasoline or naphtha. This proportion is correct for walnut and other shallow-pored or close-grained woods. For mahogany we use 6½ to 8-lbs. of paste filler to each gallon of the same solvent. For spraying fluted or reeded posts on poster beds and table legs, we use a mixture of 3-lbs. of paste filler to one gallon of solvent. A filler that is too heavy or too thick is difficult to wipe off, and anyway it isn't necessary on gum wood.

With the filler properly mixed, it still isn't ready for use until it has been strained through fine mesh wire or coarse muslin to remove all lumps. While all pressure tanks have a strainer on the fluid feeder tube, the practice of straining the filler before it is poured into the pressure tanks gives best results. If it isn't strained, small lumps in the mixed filler will have a tendency to accumulate around the strainer on the feeder tube and cause the tube to clog, this, in turn, causing an irregular spray. Also some of the smaller lumps may escape to the spray gun tip and cause unsatisfactory operation at this point. When the mixed filler is properly strained it is ready to be poured into the pressure tank.

After the prepared filler has been poured into the pressure tank and the cover has been clamped on, the air-driven agitator in the tank should be started and allowed to run about five minutes before any filler is sprayed. Then you are sure of having a uniform mixture of filler.

A pressure of 10 to 25-lbs. should be used on the pressure tank to force the filler to the spray gun. The exact pressure to use in the tank will be governed to some extent by the amount of paste filler used per gallon of solvent; naturally, a "thick" or "heavy" filler requires more air pressure to force it to the gun.

Other important factors that enter the picture here are distance and gravity—the distance the pressure tank is from the spray gun and whether it is above, below or on the same level as the spray booth. For instance, our filler tanks are on a floor below the spray booth, so naturally this condition calls for the use of more pressure in the container to force material to the spray gun.

An air pressure of 10 to 30-lbs. can be used at the gun to atomize the filler. It is extremely important that the proper air pressure should be used at the gun, as excessive spray pressure will cause the filler to dry too quickly and not penetrate into the pores of the wood. This is the cause of most of the "pinholing" in sprayed-on fillers. Use just enough air pressure on the spray gun to atomize the filler. It is not necessary to flow it on like other materials are sprayed; it should be just "spattered" on.

Technique of Spraying and Then Wiping the Filler

When spraying filler it is important to apply a uniform full wet coat, making sure that no part of the surface is missed. This is necessary for a good filling job. However, don't go to extremes! The filler coat should not be laid on too heavily, as this is wasteful of good filler and it calls for extra difficult work to wipe off the surplus satisfactorily.

Immediately after the filler is sprayed, I have the same operator

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take a large (6-in.) bristle brush and quickly brush the furniture tops to eliminate any "air pockets" that may have been caused by spraying. The man who sprays the filler has time to do this on our conveyor system while furniture on the line is passing through his spray booth.

The applied filler is allowed to dry for 5 to 10 minutes, depending upon the type of filler and the solvents used. Then the usual hand padding or machine padding is done. For this work some finishers use a small hand pad made of tow or burlap; others use a pad attached to a reciprocating air-driven rubbing machine. Next comes the usual wiping with tow or burlap. This is followed by careful removal of all excess filler from inside corners, crevices, etc., the work being done with a compressed-air dusting gun and a stiff bristle brush. The surfaces receive a final wiping with clean cotton rags or cheesecloth.

The spray method of applying filler is quite practical and satisfactory where the modern conveyor system is used in finishing furniture, and I think that within the next few years practically all finishers will be spraying filler.

Where a conveyor finishing system is used it is essential to have two or three pressure-feed tanks and spray guns in service to handle two kinds of filler—that is if you are manufacturing furniture that requires two different colors of filler, for instance, mahogany and walnut. By having tanks with different colored fillers ready for instant use, the operator can change from one filler to the other without any inconvenience.

Let's go into a huddle—about your finishing problems!

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Those Pitch Streaks

Regarding S. J. Co.'s question about "Pitch Streaks" (Dec. 1939, page 47) there is no short cut in painting this wood without treating the pitch streaks. There are various ways to do this; for instance, 1) by coating with a fairly heavy coat of shellac first; 2) using a mixture of aluminum powder and liquid shellac; 3) using ordinary water glass (silicate of soda); 4) a regular sealer undercoat that will stop bleeding. However, all of this calls for extra expense on your production.

I would suggest changing woods —using something other than pine that has pitch streaks. Then you will save all the expense of pre-treatment; you will get a better job of finishing and your finish jobs will be safe from possible bleeding for all time. Painted-over pitch streaks are almost sure to bleed whenever the surfaces are subjected to heat—even the heat of sunshine during the summer.—J. K. COOPER.

Finishing Alder Wood Case Goods

I am employed by a concern whose products (mostly case goods) are made entirely of alder, which is used extensively for furniture construction in the Pacific Northwest. Our present finishing process includes:

1) Pigment oil stain.
2) One coat of lacquer sealer.
3) One coat of rubbed-effect varnish.

The wood varies considerably in color and texture and we cannot get a reasonably uniform color on our finished surfaces. Is there any type of stain that will remedy our trouble here?

We are also having trouble with our top coat of rubbed-effect varnish. After it has been in the drying room overnight I can peel it off with my thumb nail. It doesn't seem to knit with the sealer. We have tried different types of sealers and varnishes but none seems to work satisfactorily. We have no trouble when we use shellac and gloss varnish, but the cost of sanding and rubbing is too high to allow us to use these materials on cheap furniture that can be finished in rubbed-effect varnish instead of being actually rubbed.—C. J. M. (B. C. Canada)

Questions Answers

The best way to get a uniform finish on this wood is as follows:

First use 2% of shellac to 8% alcohol; color slightly to the stain you are going to use. After one hour, apply your oil stain, using very little oil in the stain. Then apply your sanding sealer; then a thin coat of shellac; then varnish over this. Of course, you must allow adequate drying time after the application of each material. This recommended procedure should give you a uniform color and satisfactory low-cost finish.—J. G. Low (Seattle).

None of us here in the East (Reading, Pa.) is familiar with alder wood. However, your com-

plaint is a common one. A pigment oil stain, which you are now using, is suitable but it appears that you are not spending enough time on your finishing job. Since you do not select your wood for color, I would suggest that right after wiping up, you take a dry brush or a rag and touch up the dark spots with stain, thus uniforming the color. The uniform color can only be developed by the proper use of suitable stain.

Your trouble about the one coat of varnish lifting from the lacquer sealer suggests that you are using a very cheap lacquer sealer which you might just as well throw out, and use shellac instead . . . . In the event that you do use shellac, it should be a good grade of material. If you do not apply too heavy a coat, it will dry as quickly as the lacquer sealer. Our No. 3712 Shell Rock sealer would serve the purpose here, inasmuch as your letter states that you do not have time to do certain things. The use of shellac will necessarily mean sanding . . . . Laboratory tests have proved that Shell Rock sealer dries quickly and sands easily . . . .

This sealer coat of shellac or Shell Rock should be sanded efficiently and then the one coat of rubbed-effect varnish could be applied without difficulty. — W. L. O'Brien.

I find that there is nothing greatly at variance with finishing procedures on alder wood by manufacturers in the Pacific Northwest. The oil stain, lacquer sealer and varnish top coats are commonly used. The lack of color uniformity, to which he refers, may possibly be due to lack of sufficient penetration of the stain, which can be varied to some extent by different solvents. However, because of the slash grain hardness of alder there is a highlighting effect in almost any kind of staining operation. This is commonly overcome through a lacquer shading operation between the sealer and top coats. Such a lacquer material is available from almost any of the manufacturers of furniture finishing materials.

The second problem referred to would seem to indicate the lack of sufficient drying of the oil stain. The common practice is to

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have at least an overnight dry before the application of the lacquer sealer and, should the sealer be applied before the thorough evaporation of solvents and oxidation have taken place, he most certainly would encounter the peeling difficulties referred to.—H. A. Patton (Seattle).

Dip Finishing Chairs

We would like to get some information about dipping cheap chairs. Our average sales of this type of chair are about 1,000 per week. We are now finishing with the spray gun, giving the chairs one coat of stain and two coats of varnish. These chairs are made of Australian oak, a fairly hard type of timber with not very much suction.

We feel certain that by dipping these chairs we would use less material, and our labor cost should be much less.—J. A. & Co.

Since your chairs are made of hardwood, I suggest that you use a special penetrating filler-stain which you can get from any stain and filler manufacturer. To apply this filler-stain by dipping you will need a copper-lined tank to hold the material and a drainboard on which to set the chairs immediately after dipping. The drainboard, sloping toward the tank, allows the surplus to run back into the tank so it can be used again, thus saving some material. Dipped chairs should be allowed to rest on the drainboard from two to five minutes. Then they should be wiped clean, first with burlap or tow, followed by

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Holland, Michigan

a final wiping with cloth rags or cheesecloth. After this they can be stacked and allowed to dry overnight.

If you must finish these chairs the same day you can get a synthetic filler stain that can be force dried in two hours, at 125°F., and then finished as usual.

For the varnishing job I don't think there will be much saving in labor by dipping, as one man with a spray gun can varnish 800 chairs in one 8-hour day, one coat; or 400 chairs, two coats, in eight hours. If you prefer to use two coats, I suggest that you buy a special dipping undercoater for your first coat, as most undercoaters dry much faster than regular topcoat varnishes.

After the first coat has been dipped it should be allowed to dry overnight—that is, if it is to air dry. If you have facilities for force-drying you can buy a synthetic undercoat that can be force-dried for say, three hours at 125°F.; then the surfaces should be lightly sanded with No. 7/0 sandpaper and given the final coat of dip-varnish, after which the chairs should be allowed to dry at least overnight at a temperature of about 95° to 100°F. I suggest that you buy a synthetic varnish for your top coat, as this material is much tougher and dries faster under forced-drying than the old tung-oil type of varnish. Manufacturers advertising in this magazine can supply all of the materials you need.

As for the equipment for dip-varnishing, you will need the same type of tank and drainboard as used in dip-staining, but this work should be done in a room free from dust and dirt. The drain-board should have a wire screen (about 2-in. above its surface) on which to set the chairs. This will help to keep some of the dirt and foreign matter from dropping on the drainboard.

The drainboard for the varnish-dip tank should be long enough to allow the chairs to drain thoroughly before they are removed; if they are removed too soon, much of the varnish will be wasted by running off on the floor.

You should have a special type of varnish for this work, as an ordinary varnish has a tendency to run and sag on the edges, thus causing fat or heavy edges. The dip varnish used in dipping should be handled very carefully to prevent dirt from getting into it. Any varnish not used in the day's production should be taken from

the tank at end of the day and strained through fine wire mesh or clean new cheesecloth before using it again, so as to remove all dust, dirt and foreign matter; the varnish will collect some dirt while in the open tank.—H. W. CHESTER.

In our finishing department we have three dipping tanks for dip-finishing chairs. In one tank I use a combination stain and filler, which our factory buys already mixed ready for use—with the addition of reducer to thin the filler to the proper consistency. We use approximately 8-lbs. of filler to each gallon of thinner. When the filler is thoroughly mixed in the tank, the chairs are dipped in the solution, put on the drainboard and allowed to drain. Then the chairs are taken off and set on the floor to dry. It is important to use a 3-in. fitch brush on the fronts of the chairs, to brush the filler into the grain of the wood.

The next thing to do is to rub the filler thoroughly across the grain of the wood, using a soft rubbing tow. After the tow-rubbing operation, workmen use soft cotton rags to clean the surfaces. It is important to use a furniture scrub brush or pick brush to brush out all the cracks and crevices that the wiping process does not reach. After the filler dries overnight, the chairs are ready to be dipped into the first coater.

The pigmented first coater used in the old days was a slow drier, but today the finish manufacturer makes this material so that it will dry almost as fast as a lacquer sealer. We are using a pigmented first coater that dries

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hard in about two hours. This material is thinned down to the proper body with a special solvent, and the chairs are dipped and allowed to dry. After the chairs drain off fairly well, we take a 3-in. fitch brush and brush out all the runs that we find on the work. Then we allow the chairs to dry two hours or more, depending on the temperature of the finishing room. The next step is to hand sand the chairs to a smooth surface, using No. 6/0 abrasive paper. When the chairs are dusted off and cleaned, we apply the finishing coat of varnish or lacquer with the spray gun. I have used this method for a number of years and I have found by experience that this is a satisfactory way to finish this type of chairs.—R. E. CASEY.

The tank should be large enough to permit your workman to turn or rotate the chair around in the tank so the varnish will only need to be deep enough to reach about two-thirds the width or depth of the chair. A tank width of about 24 to 30-in. and a length of 5 to 6-ft. may be satisfactory, with a depth of possibly 16 or 18-in. Really, these dimensions will depend upon the size of your chairs to be dipped.

Set this tank on legs or on a low bench or table to make it a convenient height for workmen. From one or both ends, extend a sloping metal covered drainboard long enough to take 6 to 10 chairs. Dipped chairs from the tank are placed on this drainboard to rest while the excess varnish drains off and the coating begins to set. Then the chairs are carefully lifted off the drainboard and placed on the floor. A man with a brush looks over each chair and touches it up where needed to remove finger marks, fat edges, etc. Then the chairs are allowed to stand until the varnish coating is fairly dry. When not in use, the varnish tank should be tightly covered to keep out dust, dirt, lint, etc.

It is said that with one man dipping at a tank like this, he can dip-stain or dip varnish an average of 50 chairs per hour.—ED.

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Send for literature.

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Letters From I. F. Readers

(Continued from page 8)

ply is not included in the company policy any more.

I've taken the time to write several companies, asking for advice, their literature, and contacts, but from only one man did I receive any advice and some literature.

I'm interested in securing a location. I have had some good experience and I am fairly well informed generally on finishing problems. I am not looking for any large salary, but a chance to get in with a company that is really interested in a man who wants to work and develop their finishing work.

There are companies interested, but who?

I am enclosing my service and technical record. Will you advise me as to what you think of it, and how I can improve it. In addition to this I've studied carefully your last

eight issues of INDUSTRIAL FINISHING. Have you any additional available information?—W. P. B.

Service & Technical Record O. K. —ED.

". . . . It is only reasonable to add that we appreciate your journal as being very interesting, especially in your Hot Lacquer articles, and that certain ——— equipment has been ordered by reason of advertisements appearing in your Industrial Finishing."—D. M. & Co., Port Elizabeth, South Africa.

Chrome Finish

We are interested in obtaining the names of sources of supply of a spray finish for steel parts, that will give us a chrome effect.—F. Co. (Auto Parts)

We have read an article in December 1939 issue of INDUSTRIAL FINISHING entitled, "Finishing and Decorating Cabinets for Oil Heaters," and note that this concern uses what they call a chrome aluminum. We would appreciate it if you will advise us the name of the concern that manufactures this aluminum—or if there are several manufacturers please give us this information. —S. W. Inc. (Stoves)

Information supplied.—Ed.

Pearl Essence

Please send names of dealers distributing pearl essence. Possibly you can advise whether this paint is opaque or transparent.—C. R.

Names and information given. —Ed.

Multi-Colored Iridescent Rainbow Finish

LETTER No. 1—We are interested in obtaining information about a finish that can be used on various types of material, such as glass, wood, plastics, leatherette, to produce a rainbow multi-colored iridescent effect similar to the effect obtained on the paper sample herewith attached. Any help you can give us on this problem will be greatly appreciated.

LETTER No. 2—Thank you indeed

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for going so far out of your way to help us. We are appreciative for what you have done.

Now, as far the concerns you wrote to: We previously contacted three of them with little success so far as our problem is concerned. The stories we received were as follows: From A: They had been unsuccessful in attempts to obtain an iridescent effect; from B: They did not produce anything that could be used to obtain an iridescent effect on glass, wood or metal; from C: Their process of obtaining an iridescent finish was a complicated one, too expensive for use on ordinary materials.

However, we hope the remaining concerns may be able to supply us with what we want. We will write you as soon as we have heard from them.—O. R. Inc. (Specialists in New Jewelry Items)

Has any reader something to offer? —Ed.

Pitch Streak Sealer

Regarding the problem brought up by S. J. Co., in the Question & Answer department of the December issue, we have formulated a primer-sealer for this type of wood. It has given excellent results in stopping the eruptions encountered in finishing white pine. However, occasionally some shipments contain wood with very rich streaks of pitch which cannot be stopped with any type of paint. We will be glad to send a sample of our material to S. J. Co. if you will tell us their address.—The Martin-Senour Co.

Screw-cap Coating

There is a guest editorial in your January issue of INDUSTRIAL FINISHING, written by J. W. M., on pages 88 and 89, which discusses the recent development of an alkyd resin for use in the manufacture of white coatings for beer cans and screw

A table manufacturer grains the glass tops of occasional tables, and by graining from two to six tops at a time produces 368,000 tops during the year. This represents quite a considerable chunk of their business and has given them an increase in sales and profits.

caps. The outstanding properties of this resin are color retention under heat, and gloss and color retention when sterilized in water at 250°F. for one hour. In addition, it withstands severe fabrication without cracking or peeling of the film. We are interested in a material of this type and wish that you would tell use the name of the supplier, so we may obtain a sample. — T. Corp. (Finishes)

Information supplied.—Ed.

Tumbling Barrels

One of our customers wishes to purchase some tumbling barrels. Will you please tell us from whom this equipment can be purchased? — K. Paint & Chemical Co.

We have a customer in New York who is interested in obtaining the names of manufacturers of tumbling barrels for tumbling helical springs. Occasionally we are requested to furnish the names of such manufacturers. Would you be kind enough to forward us the names of these manufacturers in this part of the country? Also, if you care to, you can send a list direct to the customer in question . . . . —Y. Varnish Co.

Information furnished.—Ed.

Dipping Equipment

It is our understanding that there is on the market some sort of tanks or equipment used for applying lacquer by means of dipping, rather than by spraying. We make thousands of wooden bench legs for piano benches and up to the present time have always finished these—that is applied the lacquer — by spraying. This method not only takes a great amount of time, but it also involves considerable waste of material.

We believe you may be able to advise us what company manufactures or supplies the tanks or equipment in which we are interested.—P. R. Co. (Piano Mfr.)

Information supplied.—Ed.

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The American Machine and Metals, Inc., East Moline, Ill., announces the appointment of George Koch Sons, Inc., as exclusive agents in Evansville, Ind., for their new line of DeBothezat Ventilating Equipment.

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EDITORIAL

Furniture Show Forecasts "Fair Weather Ahead"

★ Trusty barometers of the home-furnishings industry are its national markets held at the American Furniture Mart in Chicago, and indication of fair weather ahead for the industry was shown by attendance at the recent winter national home-furnishings show held January 8 to 20, when 11,608 dealers from towns and cities in all parts of the United States gathered at the American Furniture Mart to establish a new attendance record, more than 15% ahead of the all-time high established in the winter of '39.

Representing many of the medium and small home furnishings stores as well as the large department stores and chain buying organizations, business placed by the dealers was reported most satisfactory by the manufacturers who left the market with sufficient orders on their books to keep plants running to capacity for the next several months. Conservative buying, with orders for immediate delivery, indicated healthy inventories requiring normal replacement, and manufacturers were happy with the outlook that present orders called for good repeat business, if business comes up to present expectations.

Prices were firm—no general increases noted, although some of the lines adjusted prices in keeping with current levels.

With the January market following a rather successful November showing, many of the manufacturers came into the market with delivery orders remaining on their books and shipments continuing through January. Accordingly, as is usually the case when business is running smoothly through existing channels, manufacturers were satisfied to allow current popular trends to continue, and little was done from a style angle in forcing new trends. Most of the new merchandise brought into the market followed the established trend of the past six months, with modernized 18th Century, conservative contemporary styles and modified French following a universal routine.—ROSALIE FLANK.

Equipment in Demand; New Problems Presented

During the past year finishing has developed in the same proportion as other manufacturing processes. Finishing is composed of many steps — preparation, cleaning and conditioning of surfaces; the application and drying of protective coatings and decorative effects, followed in some cases by rubbing, buffing or polishing. Then there is to be considered the type of finish to be obtained, the finishing materials used, and finally the equipment required in the application.

Consider, for example, the manufacturers of spray equipment—which is just one of several lines of productive apparatus used in modern finishing departments. It is the responsibility of the spray equipment manufacturers to keep their equipment abreast with the changes that are taking place in finishing processes and materials. This has been well done, as can be seen from the hundreds of spray gun nozzle combinations that each manufacturer must carry in order to best adapt his spray guns to these changing conditions.

An exhaust system satisfactory for use where lacquer was sprayed does not adequately handle the condition set up when the new heavy-bodied and slower-drying synthetics are used. This forced the development, several years ago, of the water-wash type of exhaust system. Because of the favorable acceptance of new finishing materials, heavier production requirements, and a greater appreciation of the advantages of good housekeeping in finishing rooms, there have been further developments and recent improvements made in water-wash exhaust systems.

Greater manufacturing activity, faster production schedules and the necessity for lower production costs are responsible for an increasing demand for specially designed spray equipment and for automatic finishing and coating machines. This type of equipment is, of course, specially designed for each particular requirement.

One large manufacturer of spray equipment declares that: "We have been building automatic finishing and coating machines for several years but there is hardly a day passes but what we are called upon to suggest a new idea for a faster automatic and low cost method of spray finishing or spray coating some product." This is probably representative of the experience of the other leading manufacturers of similar equipment.

For Foremen Only

* In November issue, page 64, the editorial under the above title expresses the truth, but some foremen finishers do not realize it. It's certainly a credit to any foreman to have one or more men in the crew trained to take his place. Of course, the short-sighted selfish attitude that some foremen take is that if another mem-

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*Guest Editorial .... Many readers can write an excellent editorial — two or three paragraphs presenting a timely suggestion or valuable idea that will stimulate thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

ber of the crew can carry on satisfactorily as foreman, the firm may let him (the present foreman) go.

Well, successful manufacturing firms are not letting really good finishing foremen go without a good business reason. And if you do not rate high enough for the firm to want to keep you, they can easily replace you with a foreman from the outside. So you aren't saving your job by keeping the men under you in ignorance. Even they may be glad to see you dismissed.

On the other hand, the foreman who strives to train and teach his workmen to become better qualified—he will have the respect and good will of both the firm and the men under him. This generous, honest attitude stamps the foreman as a real leader and as a man whom this firm or some other firm could profitably use in a higher position. Some foreman finishers move up to better jobs, such as becoming factory superintendents or managers. Others are offered attractive positions by finishing material manufacturers who want them as representatives, demonstrators, service men, etc.—L. R. VANARNAM (Foreman Finisher).

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More Decorative Striping For Streamlined Effects

* The decorating of small products is running strongly to contrasting stripes—plain rich backgrounds and brightly colored stripes. The product is usually designed with either highlights or grooves, carrying out the modern streamline effect by striping the highlights or grooves effectively with specially constructed mechanical stripers.

The old method of 2-color blending is just about gone due to the prevailing trend toward streamlining the product — long sweeping grooved or beading highlights striped in contrasting colors is fast coming to the front. Development of the mechanical striper has made this possible.

As far as the mechanical stripers proper are concerned, there is nothing new, but there are many new wheel heads that are being designed continually — and, of course, the main part of the striper.

When we first went into the manufacture of mechanical stripers the plain flat wheel to stripe a flat surface was sufficient so long as it produced an even clean-cut stripe, but now there seems to be a continuous call for special wheel heads for special problems. Fifty percent of our production is now on these custom-built heads, where striping is required on and in irregular surfaces.

In the past year we designed over 100 different wheel heads for special problems. It might be of interest to know that the special wheels are being requested by the largest and most progressive manufacturers, for striping their products.—B. M. C.

Today more than ever before, those who purchase and specify products for use in industry are insisting upon basic standards by which they may judge accurately the value of the product from quality and performance standpoints.

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W. W. Davidson, Vice President in Charge of Sales for Detroit Rex Products Co., Detroit, Mich., announces the following promotions:

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Heat Transfer of Porcelain Enamel Metals and Other Materials

The Ferro Enamel Corporation, Cleveland, Ohio, recently issued a reprint of its Technical Bulletin No. 1 entitled "Heat Transfer of Porcelain Enamel Metals and Other Materials." Rates of heat transfer through various types of coated and uncoated metals are given in the bulletin, originally published June 1, 1938. The booklet contains 28 pages 6x9-in., bound between green heavy-paper covers. Copies are available from the company.

Shellac Information Bureau Formed

Formation of the Shellac Information bureau, with offices at 70 Pine St., New York, N. Y., was announced on January 9th, 1940, by the American Bleached Shellac Manufacturers Association. Edward Hicks has been appointed Director. The new bureau is to act as an authoritative source of information on shellac and its manifold industrial and domestic uses.

Shellac reached the new high consumption level of approximately 50,800,000-lbs. in 1939, and America's total bleached and liquid shellac consumption was the largest in history. The growing demand reflects three factors, in the opinion of the Association: The prevailing low price levels, newly developing industrial

uses, and the fact that shellac is a unique natural gum with a combination of characteristics and properties no other gum possesses. Shellac is the only resin of animal origin. Largest consumer is the painting, flooring and wood-finishing industry. The furniture industry, which in 1939 enjoyed an extremely active year, is the second largest industry consuming shellac, mostly in the form of white shellac varnish.

The Shellac Information Bureau will have the cooperation of the industrial research engineers, Barsky and Strauss, in conducting scientific tests of the product in actual performance. George Bijur, Inc., is to handle the Bureau's advertising.

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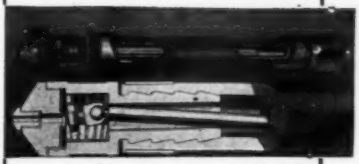

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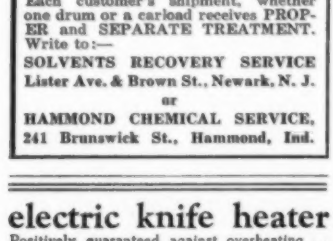

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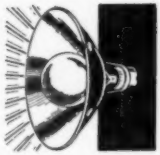

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Index to Advertisers

Advance Paint Co. ..... Front Cover
Air-Way Pump Co. 91
Akron Paint & Varnish Co. 8
American Electrotype Co. 8
Atlas Powder Co. 2
Ault & Wiborg Corp. 67

Berry Brothers 61
Binks Mfg. Co. 18-19

Campbell Co., M. L. 84
Claremont Waste Mfg. Co. 81
Classified Advertising 96

Day & Co., James B. 25
Detroit Rex Products Co. ..... Back Cover
DeVilbiss Co., The 5
Di-Noc Manufacturing Co. 57
Dolan & Company, V. J. 6
du Pont deNemours & Co., E. I. 48-49

Egyptian Lacquer Mfg. Co. 31

Ferro Enamel Corp. 94
Francis & Co., Chas. E. 78

Hammond Chemical Service 92
Hilo Varnish Corp. 71

Industrial Tape Corp. 32
Infra-Red-Ray Devices, Inc. 93

Johnson & Son, S. C. 63

Koch Sons, Inc., George 1

Lea Manufacturing Co. 23
Lilly Varnish Co. 26-27

M. & E. Mfg. Co. 82
Mahon Co., The R. C. 17
Martin Varnish Co. 9
Miracle Paint Rejuvenator Co. 94
Mitchell-Mayer Co. 85

Naz-Dar Co. 80

O'Meara, Kenneth 80
Op-Al Elec. & Mfg. Co. 92
Oxford Varnish Corp. 29

Paasche Airbrush Co. 65
Patterson-Sargent Co. ..... Third Cover

Rockford Varnish Co. 20
Ronci Machine Co. 6
Roxalin Flexible Lacquer Co. ..... Second Cover
Rudd Lacquer Corp. 88

Schaefer Varnish Co. 72
Shelburne Company, A. 85
Spruance Co., Gilbert 95
Sterling Products Co. 83
Solvents Recovery Service 92
Stowell, E. R. 93

Thresher Varnish Co. 76
Tousey Varnish Co. 79

United Lacquer Mfg. Corp. 9

van Allen Co., L. R. 88
Varnish Products Co. 7
Varnall Paint Co. 75

Zapon Co., The 2
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